

# Community Eye Health Journal

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SCAN ME

Patients waiting in a  
community eye clinic.  
THIRUMANGALAM, MADURAI  
M. RAJKUMAR



## Delivering primary eye care in the 21st century

The changing epidemiology of eye conditions calls for reimagining primary eye health care services with strong referral linkages.



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The World Health Organization (WHO) made a clear, strong call for equity in health care in the ambitious Alma-Ata Declaration (1978), which recognised primary health care as an essential means to achieve health for all by 2000.<sup>1</sup> Forty years on, despite the changes in the epidemiology of health conditions, the 2018 Astana Declaration reiterated that universally accessible, safe, quality, and affordable primary health care is an integral part of a health system.<sup>2,3</sup> Primary health care was upheld as the foundation for universal health coverage and the Sustainable Development Goals. The use of technology in primary health care was also felt to be important in the current and future contexts.

### Primary eye health care and changing needs

The WHO describes the basic clinical care provided in frontline health facilities as 'primary care'. Applying this to eye care, the clinical eye health services in primary level facilities should be called 'primary eye care' (PEC). We should broaden the scope to achieve 'primary eye health care' (PEHC), which includes health promotion, disease prevention, and rehabilitation of the visually impaired. The health systems framework is a helpful template, which can be adapted for assessing primary eye care needs and delivery, as depicted in Table 1.<sup>4</sup> For example, a district in India has an average population of 1.25 million. For every 100,000 population, there is a health facility

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## About this issue

Primary eye care is a vital component of primary health care. Primary eye care includes the promotion of eye health care, prevention and treatment of conditions that may lead to visual impairment, and rehabilitation of those who are already blind.

Despite the large network of primary care facilities in the South Asia region, large sections of the population lack access to effective primary eye care. The current issue focuses on both tested and novel approaches to primary eye care in South Asia, in particular the initiatives to integrate primary eye care with primary health care.

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called a community health centre, where a paramedical ophthalmic officer/ophthalmic assistant is posted. The person provides refraction services, follow-up services for those who have undergone cataract operation, and clinical support to diagnose eye problems such as a red eye. This function is purely an individual patient-related service at a frontline health facility and can be aptly called 'primary care'. Such individual patient-related services are also provided by other trained personnel in the private sector. However, the paramedical ophthalmic officer or assistant also provides school vision screening services, engages in health education and communication with trained general health personnel working in the public health system, and provides other eye care activities at the population level. Such services, which are more comprehensive than pure clinical work, constitute primary eye health care activities.

## Social determinants of health and eye care

Primary health care addresses the social determinants of health and the direct medical causes of disease causation. Social determinants of health are the factors that influence everyday life and health: education, housing and the environment, income and social protection, working life conditions, and social inclusion. Indeed, it has been estimated that these factors account for between a third and half of health outcomes.<sup>5</sup> These factors are also relevant to eye care. They can influence whether or not an individual develops an eye condition and is able to access services for treatment; as well as the prognosis and outcomes.

As the major causes of visual impairment can change over time, PEHC needs to evolve to remain relevant to the current eye health needs of the population (as outlined in Table 2). For example, the dramatic increase in diabetes increases the risk of visual loss from diabetic retinopathy (DR), and an increasingly ageing population is at increased risk of glaucoma. Additionally, there is an epidemic of retinopathy of prematurity (ROP) in low- and middle-income countries because of the increased chances of survival of preterm babies.

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**Table 1** Primary eye health care in the health systems framework

Health systems building blocks	Possible primary eye care activities
<b>Service delivery</b>	<ul style="list-style-type: none"> <li>• Effective, safe, and quality services, which respond to the needs of communities</li> <li>• Affirmative action to ensure access to disadvantaged groups</li> <li>• Eye health promotion, preventive care, and rehabilitation</li> </ul>
<b>Health workforce</b>	<ul style="list-style-type: none"> <li>• Adequately trained community-based salaried eye care workers</li> <li>• Volunteer core group supported by facility-based secondary level eye care personnel, including ophthalmic nurses, optometrists, and ophthalmologists</li> <li>• Community-based organisations to support PEC</li> </ul>
<b>Health information management systems</b>	<ul style="list-style-type: none"> <li>• Systems for collecting eye-related data</li> <li>• Monthly collection of disaggregated data on all ocular conditions, analysed locally and transmitted to a higher level for compilation</li> <li>• Regular feedback provided to primary eye health staff</li> <li>• Periodic surveys to assess the magnitude of eye conditions, discern trends, and capture community perceptions</li> </ul>
<b>Medical products and technology</b>	<ul style="list-style-type: none"> <li>• Clear, simple, and user-friendly manuals on eye care for primary health care workers</li> <li>• Equitable access to quality and affordable eye health products in primary care facilities</li> <li>• Use of technology to improve case detection, counselling, knowledge, and follow-up at the primary level</li> <li>• Augmenting technology-enabled referral pathways</li> </ul>
<b>Health financing</b>	<ul style="list-style-type: none"> <li>• Committed budget line for PEHC in health plans</li> <li>• Financial support for all eye health procedures, including diagnosis and treatment at secondary and tertiary levels</li> <li>• Inclusion of outpatient consultations, spectacles, and assistive appliances in health insurance schemes at all levels of eye health care</li> <li>• Inclusion of medicines and procedures needed for primary eye care in health insurance schemes (public and private)</li> <li>• Identifying community resources that can support some of the costs of delivering PEHC</li> </ul>
<b>Leadership/governance</b>	<ul style="list-style-type: none"> <li>• Inclusion of PEHC in national policies/schemes and programmes</li> <li>• Allocating at least 50% of the national eye care budget to PEHC</li> <li>• Direct walk-in at the secondary level only for emergencies; otherwise, consultation through a referral from PEC services, wherever possible, to ensure adequate care is provided</li> <li>• Review of existing health programmes to assess the scope for inclusion of eye care services in existing health care programmes, like the non-communicable diseases programme, child health programmes, school health programmes, care of the elderly programmes, etc.</li> </ul>

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**“Deploying technology can help provide primary eye care and reach the unreached population.”**

The changing epidemiology of eye conditions calls for reimagining primary eye care service with a robust referral mechanism to link to secondary and tertiary levels of care (Table 3).

**The impact of COVID on primary eye care services**

COVID-19 has impacted all levels of the health system, particularly primary health care and primary eye care services. Elective services like school vision screening and screening for ROP and DR have been shut down. With the COVID vaccine drive under way in many low-and middle-income countries, all primary health personnel, including eye care personnel, will continue to shoulder COVID-related responsibilities. Also, service users are

apprehensive about visiting health facilities. All of this will have a catastrophic cascading effect as those not screened and managed in time may become visually impaired.

In the South Asia region, some services had resumed towards the last quarter of 2020. However, most were suspended during the first quarter of 2021 due to the second surge of COVID from March 2021. Going forward, there is a huge need to reduce risks to both users and providers of primary eye care. There is an urgent need to employ teleconsultation in eye care. Its effectiveness, though, will depend on developing smartphone-based applications to capture images of the back of the eye, which could be shared from the service user's home. Technology, like PEEK,<sup>6</sup> will need to be used more widely. Each country should look at what works best in its context and plan accordingly.

**Table 2** Adapting primary eye health care to current needs

Elements of primary eye health care	Current needs and adaptation
Imparting education on eye health problems and their prevention and control	<ul style="list-style-type: none"> <li>Effective communication about eye health to encourage health-seeking behaviour is possible through digital technology and smartphones.</li> <li>Families need constant support to deal with emerging conditions like DR and ROP to reduce the risks of visual impairment.</li> <li>Support groups need to be encouraged for DR, glaucoma, ROP, low vision, etc.</li> </ul>
Ensuring proper food and nutrition, especially in low- and middle-income countries	<ul style="list-style-type: none"> <li>Low birth weight is an indicator of maternal nutritional status. It is a risk factor for ROP and refractive errors like myopia.</li> <li>Obesity is a risk factor for DR.</li> </ul>
An adequate supply of safe water and basic sanitation	<ul style="list-style-type: none"> <li>Trachoma, a leading and preventable cause of blindness, is caused by unhygienic conditions and lack of water.</li> <li>Diarrhoea can lead to vitamin A deficiency in young children, and severe dehydration may lead to cataract.</li> </ul>
Maternal and child healthcare, including family planning	<ul style="list-style-type: none"> <li>Increasing survival for preterm babies has increased the risk of ROP, screening for ROP is essential in preterm and low birth weight babies.</li> <li>Counselling should be given on consanguinity, which is a cause for childhood blindness and conditions like retinitis pigmentosa.</li> </ul>
Immunisation against major infectious diseases	<ul style="list-style-type: none"> <li>The primary purpose of rubella vaccination is to prevent congenital rubella syndrome.</li> <li>Measles and BCG vaccinations need to be augmented.</li> </ul>
Prevention and control of locally endemic diseases	<ul style="list-style-type: none"> <li>Microbial keratitis is common in agricultural communities in low- and middle-income countries.</li> <li>Leprosy is still endemic in India.</li> <li>Iodine deficiency affects colour vision.</li> </ul>
Appropriate treatment of common diseases and injuries, and referral	<ul style="list-style-type: none"> <li>It is essential to identify ocular trauma and to take steps for care and referral.</li> <li>People with diabetes and glaucoma should be regularly screened and tracked for treatment compliance.</li> <li>Those with refractive errors, including presbyopia, need to receive prompt and timely treatment.</li> </ul>
Provision of essential drugs	<ul style="list-style-type: none"> <li>The list of essential drugs should include specific eye drops and ointments.</li> <li>Availability of drugs like metformin has to be ensured to reduce the risk of vision loss in patients with DR.</li> <li>Antenatal steroid injections should be available at all levels of health care to prevent the risk of ROP.</li> </ul>

**Table 3** Suggestions to tackle emerging eye care challenges

Eye conditions/ disease-focused services	Primary eye care approaches
<b>Near vision correction facilities</b>	<ul style="list-style-type: none"> <li>Community-level personnel should be skilled to assess vision and prescribe near vision glasses.</li> </ul>
<b>Distance vision correction facilities, including low vision</b>	<ul style="list-style-type: none"> <li>Distance vision assessment skills and equipment must be available at the primary level.</li> <li>Referral algorithms for distance vision impairment need to be developed.</li> <li>Follow-up of those advised referrals have to be instituted to improve compliance.</li> <li>The use of low vision devices is required to be monitored.</li> </ul>
<b>Paediatric cataract, strabismus, and congenital anomalies</b>	<ul style="list-style-type: none"> <li>Primary care health personnel must be trained to identify poor vision, white pupil, visible congenital anomaly, and an overtly manifest squint in children for immediate referral.</li> </ul>
<b>Diabetic retinopathy</b>	<ul style="list-style-type: none"> <li>A community list of persons with diabetes must be maintained.</li> <li>Tools like a DR risk score is critical to identify those at risk of retinopathy, with counselling and referral for a retina examination.</li> <li>Screening for DR using an affordable non-mydriatic fundus imaging system have to be established in clinics managing people with diabetes, with clear directions on the referral pathway, based on fundus findings.</li> <li>There should be an annual follow-up of the individuals screened.</li> </ul>
<b>Glaucoma</b>	<ul style="list-style-type: none"> <li>All individuals with poor vision in one or both eyes where the pupil(s) is/are black need to be referred.</li> </ul>
<b>Retinopathy of prematurity</b>	<ul style="list-style-type: none"> <li>Screening for ROP should be organised at primary health centres for better compliance.</li> <li>Nurses, female health visitors, and traditional birth attendants need to be trained to counsel mothers of preterm infants about the importance of timely ROP screening in the neonatal unit.</li> <li>Facility-based births should be encouraged, for women about to go into preterm delivery.</li> </ul>
<b>Health communication in primary clinics and the community</b>	<ul style="list-style-type: none"> <li>Health communication have to be improved with appropriate communication materials, including digital content.</li> <li>Peer and parent support groups can be used to share experiences and learning.</li> </ul>
<b>School programmes</b>	<ul style="list-style-type: none"> <li>School eye health programmes should be implemented for the catchment population.</li> </ul>

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# Integrating primary eye care with primary health care: tracing the journey

Different international mandates recommend integrating primary eye care with primary health care to build a strong national, people-centred eye care programme.



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## The primacy of primary health care

In 1978, the World Health Organization (WHO) declared primary health care to be essential for achieving health for all. In 2018, Member States of the WHO strongly reaffirmed their commitment to primary health care.<sup>1</sup> In its 1984 publication (and in the later edition in 1997), *Strategies for the Prevention of Blindness in National Programmes*, the WHO advocated implementing primary eye care through the primary health care system.<sup>2</sup>

We can define primary eye care as a 'frontline' activity, providing eye care and identifying disease before it becomes a serious medical issue.

Providing primary eye care is a challenge in many countries in WHO South-East Asia, as the health care system lacks adequate human resources. The government is the principal service provider at the primary level and predominantly manages eye care in India, Sri Lanka, Bhutan, and Maldives. Whereas in Nepal and Bangladesh, the NGO sector is the predominant service provider.<sup>3</sup>

## Global action on eye health

The 'VISION 2020: the Right to Sight' initiative launched in 1999 by the WHO and the International Agency for the Prevention of Blindness (IAPB) intensified advocacy efforts worldwide, strengthened national blindness prevention programmes, and supported national eye care plans. It focused initially on diseases that cause blindness and for which proven cost-effective interventions are available.<sup>4</sup>

Subsequently, the WHO global eye health action plan 2014–2019 for reducing avoidable visual impairment was ratified by Member States of the WHO, reaffirming their commitment to VISION 2020. This action plan has a broad vision, goal, and purpose. It specifies three objectives and specific actions to be taken by the Member States and international partners to enhance universal eye health, using the health systems approach.<sup>5</sup>

The *World Report on Vision* (2019) emphasised the need to make eye care an integral part of universal health coverage and incorporate integrated people-centred eye care (IPEC) in health systems as the strategy to achieve the same. The goal through IPEC is to assure a continuum of care against the spectrum of eye conditions throughout a person's life course, according to their needs.

Two new global targets were adopted by Member States of the WHO at the Seventy-fourth World Health Assembly in May 2021: to achieve a 40% increase

in effective coverage of refractive error and a 30% increase in effective coverage of cataract surgical rate by 2030.<sup>6</sup>

## Role of community health workers in primary eye care

Ever since the 1978 Alma Ata Declaration, there has been a growing interest in the role of community health workers as a crucial bridge between health facilities and communities. Among the successful community health worker programmes in the South Asia region are the accredited social health activist (ASHA) model in India (Figure 1) and the school eye health programme in Nepal. Primary eye care has been integrated entirely with primary health care in Bhutan and Sri Lanka by training the primary health care workers on primary eye care.



**Figure 1** ASHAs assessing distance visual acuity in Delhi, using tumbling Snellen optotype. **INDIA**

## Integration of eye care services within health care services at all levels

One of the major areas of focus for the global community is universal health coverage. Primary health care and integrated people-centred eye care are the necessary foundations for this effort. When sufficiently resourced, a primary health care facility can meet people's eye care needs throughout their life course. Such a facility can be used to raise awareness of the importance of maintaining eye health and adopting eye disease prevention behaviour, such as practising facial cleanliness to prevent active trachoma. In situations where more specialised services (e.g., cataract surgery) are required, primary care centres can facilitate referrals and coordination across providers and care settings.



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To achieve a robust health care system that includes eye care, eye care should be integrated within the existing health care system at all levels. This means that eye care needs to be delivered in homes, schools, and other community settings; and integrated with inpatient and outpatient settings at the secondary and tertiary levels, improving service delivery, referral pathways, and accountability. Integration does not necessarily mean that everything is integrated into one package and delivered in one place. It means that services are so well connected that it becomes easy for users to navigate the health system and avail themselves of the services they need.

The continuum of care, which includes promotive, preventive, curative, rehabilitative and palliative services, would ideally be delivered in an integrated manner for all eye conditions afflicting individuals throughout their life. We feel integration in the true sense is to prevent eye care from functioning in a silo, and making it relevant to the broader goals of healthcare.

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# Promoting technology-enabled primary eye care in South-East Asia

Technology is a useful aid in reaching low-cost and effective primary eye care to a larger population.



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## Prioritising primary health care

In 2018, Member States of the WHO reaffirmed the criticality of prioritising primary health care to ensure that people receive comprehensive promotive, preventive, curative, rehabilitative, and palliative care as close as feasible to their everyday environments.<sup>1,2</sup> They pledged to use, with community participation, methods and technology that are practical, scientifically sound, socially acceptable, easily accessible, and affordable.<sup>1</sup>

## Primary eye care and integrated people-centred eye care

The essential health services index for universal health coverage in South-East Asia has increased from an average of 46% in 2010 to an average of 61% in 2019 (Figure 1).<sup>3</sup> Though essential health service coverage has continued to improve in the region since 2010, projections point to the need for an accelerated rate of improvement across all health components to reach the goal of good health and well-being (Sustainable Development Goal 3) by 2030.<sup>3</sup> The four essential health service components are (i) reproductive, maternal, neonatal, and child health; (ii) infectious diseases; (iii) non-communicable diseases; and (iv) health service capacity and access.

In this context, primary eye care is a vital component of primary health care and universal health coverage. It includes the promotion of eye health, the prevention and treatment of conditions that may lead to visual loss, and the rehabilitation of those already blind. Primary eye care is the primary health care approach to the prevention of blindness.<sup>4</sup> In 2019, the WHO released the *World Report on Vision*. One of its important recommendations was 'integrated people-centred eye care' (IPCEC). In 2020, the World Health Assembly resolved to urge the Member States 'to implement integrated people-centred eye care in health systems'; 'to make eye care an integral part of universal health coverage'; and 'to promote high-quality implementation and health systems research complementing existing evidence for effective eye care interventions'.<sup>5</sup> The resolution also urged Member States to focus on effective interventions for two common avoidable and treatable eye disorders—refractive error and cataract.

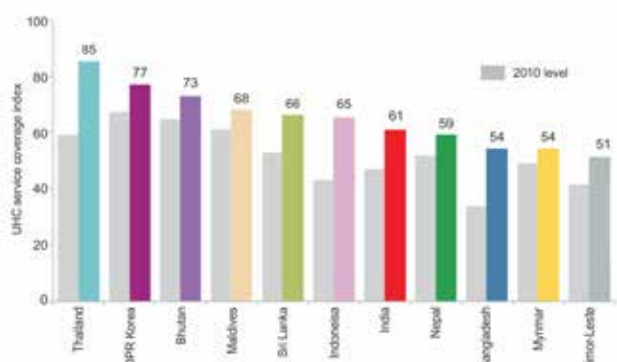
Eye care is planned for as part of the essential services provided at primary health centres and is best delivered by trained eye health personnel in the primary health care system.<sup>6</sup> For instance, primary eye care is delivered exclusively through the national primary health care system in Bhutan. In some other countries of South-East Asia, i.e., Bangladesh, India, and Nepal, a hybrid model is prevalent, with the public health care system and non-governmental organisations (NGOs) both providing primary eye care.

Primary eye care centres are equipped to correct refractive errors and identify common eye diseases in all countries, particularly cataract, diabetic retinopathy, glaucoma, and corneal infection, for

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**Figure 1** Changes in coverage of essential health services, 2010–2019<sup>3</sup>

appropriate referrals. These centres can advise the public on measures to avoid corneal injury and help rehabilitate people with low vision through community-based rehabilitation programmes.<sup>7</sup>

## Status of primary eye care in South-East Asia

Primary eye care can be delivered through a fixed facility or a mobile facility at the community level. Primary care facilities are designed to provide primary eye care only. In many countries in the region, primary health centres lag behind standalone centres in providing primary eye care. Table 1 shows the status of primary eye care in 2019 in South-East Asia (only available data are included). While we do not have data from the entire region, the available data indicate that a good network of facilities exists for primary eye care in Bangladesh, India, and Nepal in the NGO sector.

## New technology in eye care

It is increasingly realised that technology can help in providing primary eye care to a larger population, especially those in remote locations. The use of

technology enables the delivery of low-cost and quality eye care at the doorstep in three ways: remote screening and diagnosis, real-time delivery of treatment, and monitoring of continued care.<sup>8</sup> Technology-enabled portable handheld devices, such as the device for refraction, slit lamp, and fundus camera, can be easily used at a fixed facility (vision centre/primary health centre) or even, in the future, for a home-based eye examination. These devices allow a vision technician to provide comprehensive care through external eye examination (using a slit lamp), prescription of spectacles (to correct refraction errors), performing of a field test (for evaluation of glaucoma) and capturing fundus images (for evaluation of the retina) in diverse settings—primary eye care facility, school, or home.

Two other new technologies are live teleconsultation and artificial intelligence (using machine and deep learning) for diagnosis. Today's smartphone-based technology allows for teleconsulting in both synchronous mode (live video-conferencing) and asynchronous mode (store-and-forward video-conferencing). The technology of artificial intelligence is gaining ground as an aid in medical diagnosis.

Although using technology involves some inherent costs, the cost-benefits are many: among them, optimal utilisation of clinical facilities and resources, better/more efficient patient consultation by care providers, and reduced cost of consultation for patients.<sup>8</sup> Technology will continue to advance. And we will have to take technology into account for all health-related 'future planning' and 'responsive care'. In this process, especially with healthier and happier patients in mind, it is very important to integrate technology with local culture.<sup>9</sup>

**Table 1** Status of primary eye care in South-East Asia, 2019

Country	Government facilities			Large NGO facilities				
	No. of PHCs*	Number of districts in the country	No. of patients examined**	No. of eye care organisations	Vision centres	Patients seen at mobile facilities	Patients seen at fixed facilities	Total number of eye patients examined
Bangladesh	70	64	170,745	10	150	-	1,083,750	1,254,495
Bhutan	33	20	763,092	-	-	-	-	763,092
India	30,045	718	328,992,750	9	425	2,664,568	1,862,713	4,527,281
Indonesia	-	7,024	-	-	-	-	-	-
Maldives	-	Atolls 17	-	-	-	-	-	-
Myanmar	-	76	-	-	-	-	-	-
Nepal	203	77	-	32	170	-	-	1,327,603
Sri Lanka	-	25	-	-	-	-	-	-
Thailand	9,826	878	-	-	-	-	-	-
Timor-Leste	14	13	18,238	-	-	2,306	-	20,544

\* PHCs—primary health centres.

\*\*This is the general pool of patients, including those needing eye care. Specific eye care data are not available.

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# Primary eye care through vision centres—key to universal eye health

Primary eye care through technology-enabled vision centres is a key strategy to achieve universal eye health.

One of the many reasons that primary eye care is gaining importance is that it is recognised as a necessary component of primary health care. In 2015, member nations of the World Health Organization (WHO) set universal health coverage as one of the targets of the Sustainable Development Goals (SDG).<sup>1</sup> Primary health care was advocated as a key strategy for achieving universal health coverage. This holds good for eye health too. In India, primary eye care through vision centres is emerging as a crucial measure for achieving universal eye health.<sup>2</sup> Primary eye care is by design a locally delivered service, which can address issues of accessibility and associated costs that have surfaced as serious barriers during the COVID-19 pandemic.

## The need for accessible eye care

The costs associated with transport, lost wages, and the need for an attendant to accompany a patient reduce the affordability of eye care, adversely impacting health-seeking behaviour. Eye camps have been a means of providing accessible and affordable primary eye care in areas where there is little or no eye care. While the camp approach continues to be critical to delivering eye care to rural areas, its reach is quite

limited and lacks sustainability, given the inherent limitation of eye camps being held for just a day or so in any given location.<sup>3</sup> Also, the current COVID-19 pandemic and events like elections cause disruption, reinforcing the need for an alternative provision for accessible eye care.

In a population of around 50,000, a significant proportion would be 40 years or older, many of whom would have an eye care need. It is likely that 25 to 30% of this population would need some eye care—i.e., almost everyone above 45 years of age, constituting over 25% of the population,<sup>4</sup> will need eye care, and some under 45 too. Thus, a vision centre is viable for a population base of 50,000 (Figure 1). Depending on the situation, a vision centre can be a standalone facility or an integral part of an existing health care facility. A population of 50,000 in the context of South Asian countries would likely live within a radius of 10 km and thus find the facility accessible. Locating the vision centre in a rural town with public transport connectivity will further increase accessibility. This

alone can positively impact health-seeking behaviour.

## Scope of primary eye care

In addition to accessibility, another component of universal health coverage is the comprehensiveness of care. Trained ophthalmic technicians can provide comprehensive eye care at vision centres. It is also possible to provide comprehensive care with the use of technology and through referral linkages.



**Figure 1** Aravind vision centre at Alanganallur, Madurai, INDIA

**Table 1** Scope of services

	Case finding	Intervention			Compliance/ follow up
		Curative	Prevention	Referral	
Cataract	✓			✓	✓
Refractive error	✓	✓			✓
Childhood blindness	✓		✓	✓	✓
Diabetic retinopathy	✓*			✓	✓
Glaucoma	✓*			✓	✓
Corneal aberrations, ulcers, etc.	✓	✓	✓	✓	✓
Trachoma	✓			✓	✓
Low vision	✓			✓	✓

\* Using low-cost imaging and technologies like artificial intelligence (AI)

Continues overleaf ➤



To do this well, we have to define the scope of services, as suggested in Table 1.

The essential equipment in a vision centre should ideally include visual acuity charts, a trial set and retinoscope for refraction, a slit lamp for a detailed eye examination, an ophthalmoscope for fundus examination, a tonometer for intraocular pressure measurement, a glucometer, a weighing machine and height chart, as well as thermometer and blood pressure apparatus to measure vital signs. Vision centre staff are trained to carry out comprehensive eye examinations using the equipment mentioned above.<sup>5</sup> In addition, a computer with internet connectivity can facilitate the practice of telemedicine, computerising of medical records, and performance of administrative tasks, thereby enhancing the quality and efficiency of vision centres. A low-cost fundus camera with a clear protocol for its use, supported by telemedicine, can further enhance the comprehensiveness of diagnosis.

In addition to centre-based activities, vision centres can support community-based activities such as school screening. Vision centres, by virtue of their easy accessibility, have the potential to enhance adherence to treatment in patients with chronic conditions, such as glaucoma or diabetic retinopathy, as well as follow up on patients who have been advised to have surgery or referred to a hospital.

While rural vision centres are uniquely positioned to contribute to universal eye health, the reality is that many ophthalmologists and administrators are reluctant to work in small rural settings. Hence services would necessarily have to be delivered by an ophthalmic technician, supported by a similar cadre of staff taking care of administrative tasks. In this context, the service design and implementation will need to incorporate the following to achieve universal eye health:

- In the absence of an ophthalmologist, neither comprehensive eye examination nor the quality of diagnosis or care should be compromised. Telemedicine and electronic medical records can be very useful in providing quality eye care. In the context of the COVID pandemic, safer methods need

to be adopted for completing comprehensive eye examination.<sup>6</sup>

- The care cycle should be completed—i.e., patients visiting the vision centre should receive a diagnosis if possible and treatment advice. They should be able to obtain spectacles and medicines as prescribed, or get help to visit an eye hospital for surgery or advanced management when indicated.
- All of this has to be affordable for the community. Where possible, each vision centre should also be able to sustain its own operating costs financially. This can happen through charging affordable consulting fees and making margins from the sale of medicines and spectacles, in the process saving patients money and effort.

## Monitoring

Integral to effective implementation is a robust monitoring system. Given the potential of vision centres to support the delivery of universal eye health, the success of a vision centre should be measured by comparing the number of people receiving eye care with the estimated number of people in the population or community who need eye care services (the denominator). Table 2 gives a rough estimate of eye care needs for 50,000 people, a typical population base for a vision centre. This estimate can be refined for each centre based on actual details. The annual performance and coverage should be benchmarked against this 'denominator'.

The monitoring system should also monitor adherence to treatment or referral. Ultimately, it is the adherence to prescribed treatment or referral that will help manage eye health conditions. Ongoing monitoring and continuous review will result in improving eye care.

## Conclusion

Well-designed primary eye care approaches, such as technology-enabled vision centres, have the potential to contribute to the achievement of universal eye health. Since such an approach to delivering primary eye care mitigates the problem of accessibility, it may be less affected by factors such as the continuing COVID-19 pandemic. It was seen that once the

Covid-19 travel restrictions were lifted in India in September 2020, most vision centres in our network, being at an easily reachable distance, reported that their patient volumes were back to normal much sooner than in secondary and tertiary eye hospitals.

**Table 2** Eye care needs for a population of 50,000\*

Eye care needs for 50,000 population	Estimate
Those in need of any form of eye care (25% of the population)	12,500
<b>Annual need</b>	
• Cataract surgeries (based on cataract surgical rate, CSR, of 10,000)	500
• Spectacles (20%; and a change in 5 years)	2,000
<b>Ongoing care</b>	
• Patients with glaucoma (1%)	500
• Patients with diabetes (3%)	1,500
• Incurably blind and those with low vision (each at 0.08%)	40+40

\* This number serves as an illustration. The population base or the assumed rates can be changed for various conditions based on local evidence.

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# Primary eye care in Bhutan: achievements and challenges

Long-term strategic action plans focused on strengthening primary eye care services have improved ophthalmic outcomes.

**G**uided by the developmental philosophy of gross national happiness, Bhutan has made health care one of its top development priorities.<sup>1</sup> In line with the principles of universal health coverage, primary health care is central to the country's public health policy. Bhutan's health services are predominantly financed and managed by the state; health financing is approximately 3.5% of the gross domestic product.

## Primary eye care centres

Bhutan established the state-funded primary eye care programme in 1987. It became a signatory to the VISION 2020 initiative in July 2000. Today 33 primary health centres across the country deliver primary eye care (PEC) services: among others, vision and refraction diagnosis, cataract screening, treatment of common eye conditions, and referral services. All PEC centres have slit lamps, refraction sets, and essential ophthalmic medications and are run by ophthalmic technicians recruited and trained by the Ministry of Health.

Despite the country's rugged terrain, improved roads and communications have improved the accessibility to PEC services. Outreach mobile operative eye camps cover the remotest population; starting with one camp in 1987, there were 20 in 2019. Due to the shortage of ophthalmic personnel, ophthalmic workers are mobilised by primary health centres to conduct eye camps. The national primary eye care programme facilitates the mobilisation of resources and funds for the outreach camps.

Annual school eye health programmes provide vision screening, refraction services, vitamin A supplementation, and treatment of minor eye ailments to all school children. The referral hospitals regularly organise outreach clinics in the primary health centres to provide ophthalmic speciality services.

In addition to the PEC centres, there are two centres for secondary eye care services and a dedicated, fully equipped national eye centre (inaugurated in 2019) for tertiary care.

## Disease control and coverage

The nationwide rapid assessment of avoidable blindness survey (RAAB 2018) estimated a 33% decrease in the prevalence of blindness in Bhutan between 2009 and 2018, thus achieving the objective of the WHO global eye health action plan 2014–2019.<sup>2,3</sup> Between 2009 and 2018, there was a decrease in cataract blindness from 0.7% to 0.4%; and a substantial increase in cataract surgical coverage from 72.7% to 86.1%, combined with improved visual outcomes.<sup>3</sup> Conjunctivitis was no more health morbidity in 2020

as it was in the past.<sup>1</sup> Unoperated cataract and corneal opacities have also reduced in the last two decades.

## Service quality and efficacy

The promotion of manual small-incision cataract surgery and the universal use of intraocular lenses (IOL) have revolutionised cataract surgery; over 97.3% of people received an IOL implantation in 2018. Post-cataract surgical visual outcomes have improved: 67.3% of patients had good visual outcomes (VA>6/18) in 2018.<sup>3</sup> The recruitment of eye specialists from neighbouring countries on a contract basis and the strengthening of secondary and tertiary centres have led to reduced ex-country referrals for advanced tertiary eye care needs.

## Human resources and planning

The training of allied ophthalmic personnel commenced in 1987, and a four-year ophthalmology residency programme was started in 2014. Starting with a lone ophthalmologist in 1987, Bhutan had 12 ophthalmologists, 9 optometrists, and 55 allied ophthalmic personnel in 2020. The aim is to achieve human resource self-sufficiency in the coming decade to staff all primary health centres with at least one ophthalmic assistant. To address the present shortage of ophthalmologists, optometrists and allied ophthalmic personnel could play a complementary role in the provision of non-surgical services.

The use of data and evidence for planning PEC activities have helped improve eye care. The nationwide baseline (2009) and follow-up (2018) RAAB surveys (Figure 1) have been used to assess and plan PEC activities.<sup>2,3</sup> In 2019, the school sight survey screened 175,000 school-aged children for refractive errors, and the results have aided in planning refractive services.<sup>4</sup>



**Figure 1** An elderly person gets screened for vision during the RAAB survey in 2018, Trongsa, BHUTAN

*Continues overleaf* ➤

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## Challenges, changing trends, and the way forward

In Bhutan, the avoidable causes of visual impairment are still high (88.9%); 74.3% is attributable to cataract and refractive error. The volume of surgery (1,550 per million people) is lower than in other South-East Asian countries.<sup>5</sup>

With population growth and ageing, the incidence of refractive error and posterior segment diseases, including diabetic retinopathy, age-related macular degeneration, and glaucoma, is rising.<sup>2,3</sup> To address this epidemiological transition, effective screening programmes must be embedded within the existing non-communicable diseases and primary health care frameworks. Paediatric eye health, including screening

for retinopathy of prematurity, should be integrated into the broader child health initiatives. Long-term strategies for managing cataract and refractive error need to be developed. Population surveys and health systems research for effective PEC interventions are needed more than ever.

The ever-increasing healthcare costs, a declining share of external resources (owing to Bhutan's potential to graduate from the 'least developed country' status in 2023), and the COVID 19 pandemic are all undermining the sustainability of free health care.<sup>6</sup> To ease the pressure on the already stretched health system and resources, we would suggest encouraging private sector participation and instituting some system of user fee model for eye health services.



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# Primary eye care in Nepal: current situation and recommendations for integration

Trained primary health care workers and mid-level ophthalmic professionals at the existing primary health care networks are needed to provide crucial first-level ophthalmic care.

## Overall progress in eye care

In the last four decades in Nepal, following the landmark national blindness survey in 1981, there has been significant progress in the field of eye care. The estimated number of people with blindness decreased from 118,000 in 1981 to 93,000 in 2012 despite the growth in population. The number of ophthalmologists increased from seven in the 1980s to 400 in 2020. The eye care infrastructure, including community eye centres, eye departments, and eye hospitals, increased from five in 1981 to more than 100 in 2010. These improvements led to a reduction in the prevalence of national blindness from 0.84% in 1981 to 0.35% in 2010.<sup>1,2</sup>

Nepal was one of the first countries in South Asia to implement VISION 2020: The Right to Sight. It adopted disease-focused strategies and vertical eye health programmes to tackle common diseases causing blindness.<sup>3</sup> By 2018, Nepal successfully eliminated trachoma as a major public health concern, thanks to the National Trachoma Programme, a public-private partnership launched in 2002.<sup>4</sup>

Nepal is a signatory to the World Health Organization's global eye health action plan 2014–2019. The country's National Health Policy 2019 has provided for the development and expansion of eye care services through public-private partnerships in all three tiers of government: federal, provincial, and local; the integration of primary eye care with primary health care; and the coordination of eye care programmes by a dedicated eye unit at the federal ministry of health.<sup>5</sup> Provincial governments have started the 'one school,

one nurse' programme to provide basic health care, including eye care to school-going children.

Nepal's public health insurance scheme was launched in 2016–17, now covering 75 out of 77 districts. The main objective of the scheme is to increase the financial protection of the public by promoting pre-payment and risk pooling in the health sector. Any Nepalese family paying the premium amount of 3,500 NPR (about USD 29.5) per annum set by the Health Insurance Board can get the benefits of the package irrespective of their employment status. The benefits cover outpatient eye care, emergency hospital care, ophthalmic investigation, minor and major surgeries, and ocular medicines. These services can be availed of in public and private hospitals recognised by the Health Insurance Board of Nepal.<sup>6</sup>

Despite the developments in eye health care, the incidence of blindness and vision impairment has not reduced as expected. The reasons are population growth, ageing, inequitable distribution of resources, and lack of integration between levels of eye health care. The pattern of disease has changed from acute infections to chronic ones.<sup>1,2</sup> The 2011 mid-term review of the VISION 2020 programme revealed that eye care services were not integrated with primary health care; nor was the modality of partnership with non-governmental organisations (NGOs) and the private sector well defined. Most of the NGO-run eye care programmes were struggling financially, and adequate attention was not given to universal health access.<sup>7</sup> The low enrolment and high dropout rates in the national health insurance scheme have meant poor

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utilisation of the available eye care benefit packages.<sup>8</sup> As a result, patients mostly end up having to pay for cataract operations.

### NGO-run primary eye care services

Primary eye care centres/community eye centres, usually run by NGOs, are fixed facilities where an ophthalmic assistant provides services such as management of common ocular disorders, health education, vision assessment, refraction, optical dispensing, school screening as part of outreach activities, and referral help. Most of these centres are located in district headquarters, which tend to be remote from villages in this hilly country. Consequently, more than 40% of the population is without basic eye services. Inevitably, people have to pay out of pocket, even for primary eye care.

About two years ago, NGOs partnered with municipal authorities to establish rural and urban eye clinics beyond district headquarters. In this model, the NGOs provide the equipment and technical support, while salaries and other running costs are borne by the municipality.

### Limitations and recommendations

Nepal's strong primary health care network covers all 77 districts and local *palikas*. The primary health care centres are run by primary health care workers, who often lack formal training in eye care. Lack of trained personnel is a big limitation of the primary health care programmes with respect to eye care.

At the community level, there is a great potential for training primary health care workers and female community health volunteers to promote eye health through early case detection and referral advice. This can help in the continued control of trachoma, prevention of corneal blindness, and control of eye diseases due to nutritional deficiency. The country needs more mid-level ophthalmic professionals, or ophthalmic assistants, to serve the need for increasing primary eye care services. Along with scaling up the existing community eye centres, trained mid-level ophthalmic professionals can be placed at primary health care centres to integrate eye care with general health care.

At the secondary level, district and zonal hospitals are already starting to set up eye departments run by ophthalmologists, where cataract services are available in a phased manner. We recommend that eye care departments with all the sub-speciality services should be set up at the province-level hospitals. They should be responsible for managing referral cases. In the difficult terrain of Nepal, telemedicine can be used to reach remote and as-yet-unreached sections of the population. The existing tertiary centres should be equipped with teaching, training, and research facilities.

### Conclusion

NGOs and the private sector have mostly driven eye care delivery in Nepal. The rural population continues to be deprived of basic eye care services, as primary health care workers are not trained to provide eye care. Eye care services by NGOs and the private sector are either not easily accessible or are expensive. The solution lies in training primary health care workers sufficiently so that they can provide the crucial first level of ophthalmic care. It is also necessary to increase the number of available trained mid-level ophthalmic professionals and depute them to government primary health care centres.

At the same time, the public-private partnership strategy, which has been effective in eliminating trachoma from Nepal, is a model which could be applied to the provision of essential eye care services. At all three levels of eye health service, the government should be the ultimate regulatory body.

# Primary eye care model in India

The provision of primary eye care within an integrated health care system is a feasible and self-sustaining model of eye care.



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In India, primary eye care forms a critical aspect of primary health care, i.e., eye care is integrated with different multisectoral health schemes, such as the mother and child and non-communicable diseases programmes. Broadly, there are three models of primary eye care prevalent in India—government initiatives, public-private partnerships, and initiatives by non-governmental organisations. This article covers government initiatives.

Eye care services are made available at fixed centres (either standalone or integrated with primary health care centres) or via mobile van service, or through remote consultation.

### National initiatives in eye care

#### National programme for control of blindness and visual impairment

The national programme for control of blindness and visual impairment (NPCBVI) was launched in 1976 with the target to reduce the prevalence of

**ASHA workers being trained at Changlang district, Arunachal Pradesh. INDIA**



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blindness from 1.4% to 0.3 % by 2020.<sup>1</sup> The achievements of the last decade have been encouraging. The rapid survey on avoidable blindness conducted under the programme during 2006–07 showed that the prevalence of blindness reduced from 1.1% in 2001–02 to 1% in 2006–07.<sup>2</sup>

Since 1994, the school eye screening programme has been an integral part of the NPCBVI. Its initiatives include identifying schools, collecting information on eye care needs of students and teachers, screening and referrals, training of school teachers, and prescribing and providing free spectacles to students from poor socioeconomic backgrounds.<sup>3</sup>

### Ayushman Bharat scheme

The Ayushman Bharat scheme, launched in 2018, aims to achieve universal health coverage in India. This is fully funded by the Government of India and has two components:

- Pradhan Mantri Jan Arogya Yojana (PM-JAY): This is a health insurance scheme providing a cover of 0.5 million INR (about USD 6,800) per family for secondary and tertiary care hospitalisation. The beneficiary does not have to pay any user fee or premium under this scheme. The households included are based on the deprivation and occupational criteria of Socio-Economic Caste Census 2011 (SECC 2011).<sup>4</sup> Importantly, the reimbursement of cataract surgery is an integral part of this programme.
- Creation of health and wellness centres (HWCs): a total of 150,000 existing sub-health centres, primary health centres and urban primary health centres will be transformed into HWCs by 2022, each covering a population of 3,000 to 3,500. Eye care will form an

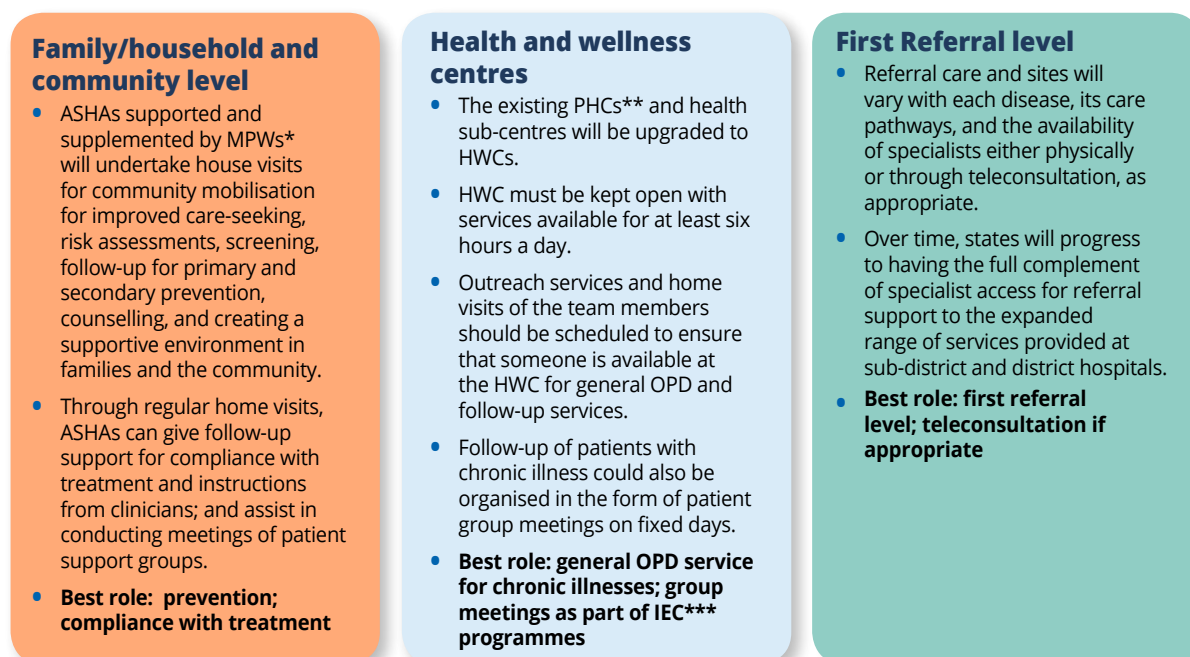
integral component of the comprehensive health care services provided at these centres (Figure 1).<sup>5</sup> About 70,000 such centres are operational, where 413.5 million people (of which 54% are women) have accessed healthcare. More than 945,000 teleconsultations have been conducted.<sup>6</sup>

## Hub and spoke model of eye care

The provision of primary eye care within an integrated health care system is a feasible and self-sustaining hub and spoke model of eye care. Critical to the success of this model are the following: training existing health care personnel, launching campaigns to inform and educate patients and service providers, and providing essential equipment for screening.

In this context, the role of accredited social health activists (ASHAs) can be strengthened. These health activists are community health workers recruited under the government's National Rural Health Mission.<sup>7</sup> With appropriate training and sensitisation, ASHAs can play an important role in identifying eye-related problems at the community level and encouraging patients to seek timely primary eye care services locally.

At the heart of the hub and spoke model are vision centres, established at the level of the community health centre. This model is cost-effective, provides comprehensive eye examination, and is a practical means to prevent and control blindness among the underprivileged population. The newer technology of teleophthalmology links those requiring more than primary eye care to secondary and tertiary eye care hospitals.



\*MPW multipurpose worker

\*\*PHC primary health centre

\*\*\*IEC information, education and communication

**Figure 1** Organization of service delivery under PM-JAY<sup>5</sup>





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# Strategies to improve delivery of primary eye care in public health care institutions in Sri Lanka

Primary eye care is integrated within the public health care system by providing primary eye care at the outpatient departments of secondary and tertiary health care institutions, with unrestricted access.

Despite a strong primary health care system in Sri Lanka, the successful integration of eye care services at the primary level of health service delivery is still evolving. The majority of eye care service provision is at the secondary and tertiary levels.

According to a study of blindness and visual impairment in Sri Lanka that examined a nationally representative sample of 5,779 people aged  $\geq 40$  years, the prevalence of blindness in the country is 1.7% and that of low vision is 17%. Cataract (66.7%) and uncorrected refractive errors (12.5%) are the most common causes of blindness.<sup>1</sup> Blindness is significantly higher in those aged  $\geq 70$  years, as compared to those aged 40 to 49 years.<sup>1</sup> The data are helpful for assessing and planning for the eye care needs of the population. The focus on improving service delivery at the primary eye care level is an important step in identifying the needs early.

## Government policy on primary health care

The Sri Lanka National Health Policy 2016–2025 endorses a people-centred health system based on universal health coverage.<sup>2</sup> The National Health Policy builds on the mandates of quality health care and equitable coverage, which are the focus points of the 2018 policy on health care delivery for universal health.<sup>3</sup> The provision of first contact care through the strengthening of the primary care system has been given top priority. In this strategic approach, primary eye care is integrated within the primary health care system.

health care facilities: all tertiary (22) and most of the secondary level (94) health care institutions under the ministry of health centrally; and several secondary and all primary level facilities (470 divisional hospitals and 475 primary care units) under the provincial councils at the sub-national level, give access to a health care facility within a 4.8 km range in any region. One primary care institution covers about 5,000 people at the community level. The public sector provides 85 to 90% of the inpatient care. Sri Lanka delivers primary health care, inclusive of eye care, through two models: preventive services and curative interventions.<sup>4</sup>

## Primary eye care service delivery

Primary health care delivery is through a range of health care facilities: central dispensaries, peripheral units, and divisional hospitals—all designated as primary care medical institutions (PMCI)s—which are equipped to provide basic eye care, such as treating chalazion and conjunctivitis, screening for visual acuity to identify refractive errors and cataract, and referring patients for further care at a specialist eye clinic at the secondary or tertiary level. The new essential services package strategy aims to strengthen the delivery of primary eye care services at primary care medical institutions by improving the availability of medical supplies and equipment. A qualified medical officer provides services in most of these institutions; however, there is no specific ophthalmic training for these medical officers at present other than any training they may have obtained optionally under the basic medical degree.

A key feature of the current health system is that strategies are being identified and developed for the integration of primary eye care service delivery with the outpatient departments of secondary and tertiary level health care institutions, with unrestricted access and no charge.

Figure 1 describes the existing policies and programmes, service packages, and delivery models with respect to primary eye care.

## Way forward

Although Sri Lanka has an exemplary primary health care service network, it needs to strengthen the delivery of primary eye care services. A shortage of appropriately skilled mid-level eye care personnel and a lack of medical supplies and technology



The provincial health ministries manage the primary health care (PHC) institutions in the nine administrative divisions, or provinces, in Sri Lanka.<sup>3</sup> The Sri Lankan government aims to provide health services free of charge at the point of delivery and spends 3.24% of gross domestic product on health. The organisational structure consists of 1,067 public sector

*Continues overleaf* ➤

have been identified as the main barriers.<sup>5</sup> The current unrestricted referral system is leading to overcrowding in specialised clinics at the secondary and tertiary levels.

Service delivery that can meet individual and population needs, effective training modules for mid-level eye health personnel, multisectoral collaboration, community participation, and the

development of infrastructure in rural areas to bridge disparities are essential strategies to serve the country's evolving eye health needs.<sup>6,7</sup> There is a high potential for a successful blindness prevention programme in Sri Lanka, based on systems established under the VISION 2020 country programme in previous years.

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## Health policies

- National health policy 2016–2025
- Policy on healthcare delivery for universal health coverage 2018 (enacted)
- Health policy and strategic plan on prevention and control of chronic non-communicable diseases (under discussion)
- Proposed policy brief on diabetic retinopathy screening, using handheld retinal cameras (under review)

## Health care delivery programmes, with respect to eye care

- School eye inspection conducted by the family health bureau: checking early for visual impairment, especially refractive errors
- Essential services package, inclusive of eye health, provided at primary medical care institutions
- Shared cluster system: referring an assigned population (5,000 to 10,000 people) to one curative primary health care institution to improve uptake at the primary eye care level and to regularise the referral system

## Service delivery of primary eye care

### Basic eye examination

- Primary eye care service delivery at outpatient departments (OPDs) of secondary and tertiary health care institutions, with unrestricted access and without need for a referral
- Availability of distant vision screening at OPDs at all levels of service delivery
- Availability of fundoscopic examination by a physician, using direct ophthalmoscope at all OPDs
- Screening for visual acuity of those aged ≥35 years at healthy life centres (1,007 centres country-wide)

### Preventive care

- Eye health services delivered by medical officers of health (in 355 clinics country-wide) and by public health midwives at the community level (e.g., vaccination, vitamin A supplementation, neonatal eye care)

### Referral for specialised care

- Unrestricted referral system to access specialised care, without geographical or administrative boundaries

### Health education and training

- Health educational programmes at OPDs
- Training of 500 medical officers (a pilot project) in screening for diabetic retinopathy, using handheld digital retinal cameras (proposed)

**Figure 1** Integrating primary eye care with public health care



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# Ensuring primary eye care at the school level: a national eye care initiative in Bangladesh

The early detection of possible vision problems through school eye testing is key to ensuring eye health in children.



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## National eye care programme

Bangladesh is a low-income country in South Asia with a population of 160 million, the majority of which (66.5%) lives in rural areas. Despite rapid urbanization and gains in socio-demographic indicators, around 18% of the population (of which 36% is rural and 28%, urban) still lives below the poverty line.<sup>1</sup> Getting basic eye health care remains a challenge for poor and marginalized sections of the population.

With the objective of improving eye care service delivery at all levels of health care in Bangladesh, the government of Bangladesh has instituted the national eye care (NEC) programme under the 4th Health, Population, and Nutrition Sector Programme (4th HPNSP) for the period 2017–2022. The objective of the operational plan of the NEC is to improve eye care service delivery at all levels of health facilities in Bangladesh. One of the six specific objectives is to control childhood blindness and increase awareness about blindness prevention among the population.<sup>1</sup>

## Vision impairment in children

The age standardized prevalence of blindness is 1.53% in Bangladesh; around 51,200 children are blind; 1.3 million children have refractive errors; and an additional 153,000 children are affected by low vision problems, which are avoidable through timely intervention.<sup>1</sup> According to a study conducted in a peri-urban setting in Bangladesh, the most commonly observed ocular morbidity was refractive error in children aged less than 15 years.<sup>2</sup>

Since children are not always able to point out vision deficiency at an early enough stage and parents may remain unaware of the gradually developing vision problem, uncorrected refractive errors can have a detrimental impact on children's learning capacity and academic outcomes. Timely eye screening of children helps in the early detection and correction of common eye problems, such as strabismus, developmental cataract, ptosis, amblyopia, and macular dystrophy.

## Ensuring eye health through school sight testing

School health programmes are fully funded by the government of Bangladesh. They have moved from the once narrow practice of a medical examination of children (4 to 16 years) to the now broader goal of comprehensive care for the health and wellbeing of children throughout the school years. This change is reflected in the national eye care (NEC) programme. The NEC programme lays special emphasis on the provision of school eye health services through the school sight testing programme (SSTP). All levels of schools, i.e., kindergarten, primary, and secondary, as well as schools for children with disabilities, are included in the NEC programme.

Based on the SSTP findings, the major challenges to providing efficient refractive error services for school children in Bangladesh are: poor health-seeking behaviour; lack of knowledge about refractive status among students, parents, and teachers; poor access to screening; problems with availability and affordability of prescription spectacles; poor compliance of wearing prescribed spectacles; and negative attitudes and beliefs regarding the use of spectacles.

The overall goal of the school sight testing programme is to increase awareness of common eye problems, ensure early detection and proper management of eye problems, provide for correction of refractive errors with appropriate spectacles, and spread awareness of safety measures to prevent ocular injuries.

The programme manager and deputy manager are responsible for the follow-up activities resulting from the programme. The components of the school sight testing programme are:

- *formation of SSTP team*, which would include an ophthalmologist (the team leader), postgraduate students, nurses, and office staff
- *communication* with the school authorities for fixing testing schedules

**Eye testing camp at an inclusive school in Dhaka.**  
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- *raising awareness* among parents and guardians about child eye care
- *orientation sessions* for school teachers to familiarise them with common eye problems in school-age children and the procedure for vision screening
- *assigning a teacher* as the focal person to communicate with the NEC authorities
- *hands-on training* in vision screening for class teachers
- *vision screening* for students using an E-chart or, in the case of students with autism or cerebral palsy, a vision screener
- *eye examination* with a handheld slit lamp
- *treatment* for eye problems detected (prescribed medicine provided free of cost)
- *referral* to a higher level of eye care centre, if needed (e.g., for cycloplegic refraction)
- *subjective refraction* conducted after objective refraction (the latter done with auto-refractometer and retinoscope) for prescribing spectacles
- *provision of prescribed spectacles* to children in school, free of cost, within seven to ten days from an optical shop assigned by the NEC.

Under the school sight testing programme, teachers are given primary training by the government. To make the school sight testing programme cost-effective, visual acuity of less than 6/9 is taken to be defective vision. It is advised that students whose vision is 6/9 have their vision checked again six months later by a class teacher. If visual acuity is less than 6/9, the pinhole test is carried out. If vision can be corrected after testing using the pinhole test, objective refraction and subjective refraction are performed for prescription of spectacles. If vision does not improve, the child is referred to an eye hospital for further investigations and treatment.

Under this programme, on average, 1,650 children are screened each year. In past 12 months, 81 children have been provided with spectacles, and 25 children were referred to nearby government hospitals.

Raising awareness among teachers, parents, and children about eye health and ensuring that all school children be offered visual acuity screening are critical to the early detection of possible vision problems.

### A child undergoing vision screening.

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## Test your knowledge and understanding

Use these questions to test your understanding of the concepts covered in this issue.



### Question 1

Which of the following is/are known determinant/s of visual impairment?

- ☐ a. Poverty
- ☐ b. Social inclusion and non-discrimination
- ☐ c. Access to affordable health services of decent quality
- ☐ d. Education
- ☐ e. Ageing
- ☐ f. Preference for traditional healers
- ☐ g. All of the above

### Question 2

Select the correct statement to complete the sentence. Vision 2020: The Right to Sight is:

- ☐ a. focused primarily on low socio-economic groups in a population
- ☐ b. directed at primary health workers for prevention of eye diseases.
- ☐ c. a WHO initiative to address the growing burden of blindness globally
- ☐ d. an NGO- and government-initiated activity
- ☐ e. focused on avoidable blindness due to cataract, refractive error, and childhood blindness

**Question 3**

**With respect to Vision 2020: The Right to Sight, which of the following is/are not relevant to a practising eye health clinician?**

- ☐ a. To identify the effectiveness of their eye unit and explore its potential to increase cataract surgical services
- ☐ b. To support the training of primary health care workers and maternal and child health workers in primary eye care in the catchment area
- ☐ c. To do more charity work in rural areas
- ☐ d. To ensure the integration of treatment and prevention activities

**Question 4**

**Which of the following is/are component/s of primary eye care?**

- ☐ a. Eye health education
- ☐ b. Basic eye examination
- ☐ c. Timely referral
- ☐ d. Visual acuity measurement
- ☐ e. All of the above

**ANSWERS**

1. g.—Social determinants of health are the non-medical factors that influence health outcomes. They influence health equity in positive and negative ways.
2. c.—VISION 2020: The Right to Sight was launched in 1999 by the World Health Organization and the International Agency for the Prevention of Blindness.
3. c.—This is NOT relevant to the VISION 2020 strategy. VISION 2020 is about developing integrated sustainable, quality, and equitable eye care services and is not promoted as a standalone charity activity.
4. e.—Primary eye care is a frontline activity, providing care and identifying disease before it becomes a serious medical issue.

**Courses****Short course in Diabetic Eye Disease: Building Capacity to Prevent Blindness**

Understand the diabetes challenge and how health professionals can work with people with diabetes to prevent blindness. Learn the key facts about diabetic eye disease and its

management, and how health teams and people with diabetes can work together to reduce the risk of vision loss and blindness.

On demand, available now. Visit: <https://www.futurelearn.com/courses/diabetic-eye-disease>

**Reports****The Lancet Global Health Commission on Global Eye Health: Vision Beyond 2020**

**THE LANCET**  
**Global Health**

Published in February 2021 and authored by leading experts from 25 countries, the Lancet global health report calls for the inclusion of eye health in the mainstream agenda to achieve universal health coverage and the Sustainable Development Goals. The report contends that eye health should be included in the planning, resourcing, and delivery of health care. The report outlines the barriers to accessing high quality comprehensive eye health services.

The full report is available at <https://bit.ly/2YBkjfp>

**Two new global targets for integrated people-centred eye care (IPEC) 2030 adopted at the Seventy-fourth World Health Assembly, 19 April 2021**

The first World Report on Vision was launched by the WHO in 2019. The report highlights the growing need for eye care globally and promotes IPEC as the framework to achieve this. The monitoring of strategies and action taken is key to the effective planning of eye care services. Therefore, to track progress at the country level and to address unmet eye care needs, Member States have set feasible global targets:

- 40% increase in effective coverage of refractive error by 2030
- 30% increase in effective coverage of cataract surgery by 2030

Read the document at: <https://bit.ly/3AoQw6K>



**WHA 74, executive board room in WHO headquarters. GENEVA.**

**Report of the International Conference on Primary Health Care, Alma-Ata, USSR, 6–12 September 1978**

The historic and visionary Alma-Ata conference, jointly convened by the WHO and UNICEF, focused the world's attention on primary health care. The Alma-Ata declaration is a major milestone in the field of global public health, emphasising the importance of the social determinants of health, global solidarity for health equity, accountability to people and communities, and access to comprehensive health care services for all through the principles of primary health care.

Read the report at: <https://bit.ly/3oIRkRh>





# Key community eye health messages

## Integrated people-centred eye care refers to eye care services that



INDRA P. SHARMA

- Are managed and delivered to ensure a continuum of care that includes promotive, preventive, treatment, and rehabilitative interventions against different eye conditions
- Are coordinated across different levels and sites of care within and beyond the health sector
- Address the full spectrum of eye conditions according to people's need throughout their life course

## Adapting primary eye health care to current needs



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- Educating communities about eye health and encouraging health-seeking behaviour
- Liaising with maternal and child health programmes to identify and manage eye conditions like congenital cataract, congenital glaucoma, retinopathy of prematurity, childhood blindness
- Identifying common diseases and injuries and promoting steps for care and referral

## Technology to improve access to eye care services



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- Training primary health care workers and ophthalmic assistants in using devices, such as portable fundus camera, slit lamp, Arclight and smart phones, for remote eye screening and diagnosis
- Smart phone technology for teleconsultation in synchronous and asynchronous modes
- Virtual reality-based training for capacity building of eye care professionals and health workers to deliver comprehensive eye care