Meeting Report

Technical Consultation
on Models of Innovative Financing
for Eye Health

2–3 December 2014
Manila, Philippines
MEETING REPORT

TECHNICAL CONSULTATION ON MODELS OF
INNOVATIVE FINANCING
FOR EYE HEALTH

Convened by:

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NOTE

The views expressed in this report are those of the participants of the Technical Consultation on Models of Innovative Financing for Eye Health and do not necessarily reflect the policies of the conveners.

This report has been prepared by World Health Organization Regional Office for the Western Pacific and The Fred Hollows Foundation for Member States in the Region and for those who participated in the Technical Consultation on Models of Innovative Financing for Eye Health in Manila, Philippines from 2 to 3 December 2014.
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SUMMARY

On 2–3 December 2014, 18 eye-health and health-financing specialists joined staff from The Fred Hollows Foundation and the World Health Organization (WHO) in Manila to discuss innovative models of financing eye health. The discussions centred on practical and cost-effective ways to achieve the near-term and long-term goals of *Universal Eye Health: A global action plan 2014–2019*. The challenge was discussed in two parts:

1) ensuring that eye-health systems are adequately resourced and working productively to meet longer-term challenges, consistent with universal eye health; and
2) finding ways to reduce the large number of untreated cases of avoidable visual impairment in the near-term, known as the backlog.

This report summarizes the seven main themes that emerged from discussions and the issues for future action:

1. Structurally, governments play a critical role in eye-health systems: providing stewardship and being responsible for ensuring equitable access to eye-health systems.
2. The specific mix of private and public providers should be determined by local conditions – it is critical that people can access the available services.
3. The extent to which eye health services should be integrated into broader health systems to make systems more efficient should be considered.
4. Innovative finance can increase the funds available in eye health and improve the effectiveness of existing funding. However, developing effective local financing streams is a priority.
5. System expansion does not always improve access. Financial incentives should be tailored to ensure demand and supply in eye-health markets works more effectively and equitably to achieve desired eye-health outcomes. Priority should be given to what we know works.
6. In each case, and each context, success depends on overcoming the evidence gaps that persist. Understanding the drivers of supply and demand in eye-care services is critical. Understanding the factors preventing change is also important.
7. A strong emphasis on effective advocacy is needed to raise the profile of eye health, influence health policy-makers and make eye health a public health priority.

The strong take-home message from the consultation was that common epidemiological parameters of visual impairment mean that the broad trajectory of eye-health financing and delivery is likely to be similar across countries. However, the details will differ. Clearing untreated backlogs of cataracts and refractive error is an opportunity to make meaningful reductions in the prevalence of avoidable visual impairment in the near term. While system expansion is important, there must be a complementary focus on finding ways to get more out of existing eye-health systems. To that end, understanding both the demand for and supply of eye-care services is critical. However, in all cases, efforts to address untreated backlogs must be sensitive to the need to develop stronger health systems – a prerequisite for universal access.

Below are the recommendations.

For Member States:

1) Make the elimination of avoidable visual impairment a public health priority and, through effective stewardship, dedicate efforts to optimising cataract surgical coverage in all contexts.
2) Strengthen the economic drivers of supply and demand in eye health by distinguishing clearly between financing service provision and financing service access.
3) Invest more heavily in data collection. This includes greater collection and reporting of financial flows as well as rapid assessment of avoidable blindness (RAAB), eye care service assessment tool (ECSAT), and analyses of patient characteristics and barriers to service access.
4) Improve allocative efficiency of resources in individual contexts – for example, what is the optimal allocation balance of labour inputs (cadres), physical capital (theatres) and service providers.

5) Make detection and management of diabetic retinopathy an integral part of the care of a person with diabetes.

For NGOs:
1) Prioritize and tweak financing and delivery models that are known to work, with a view to replication and enlargement. In particular the high volume low-cost cataract social enterprise models should be expanded in scale and scope into places where the conditions are ripe for change – that is where the model is absent and services are clearly overpriced.

2) Increase the research and advocacy focus with governments, on what drives (and prevents) change in eye health, including the established interests of service providers.

3) Study how providers are paid for services – and devise purchasing strategies to protect people with low socioeconomic status. In countries where there are prepayment schemes this may focus on advocating for the inclusion of eye-health services into benefits packages and in countries without large prepayment schemes, it will focus on relieving out-of-pocket expenditure.

For WHO:
1) Maintain the dialogue between eye-health practitioners and health specialists initiated at this consultation. Contact among a diverse group of experts, and an active agenda of work, will allow good research, policy and advocacy ideas on innovative financing to emerge.

2) Directly advocate to governments about the need for greater focus on eye health and a financing strategy with two parts: (i) a focus on improving the capacity of eye-health systems and integrating eye health into stronger health systems over the longer term; and (ii) a time-limited focus on clearing backlogs for the nearer term.

3) Undertake country-specific assessments to more deeply understand service provision and use, coverage rates, human resource requirements and financing mechanisms, and develop tailored strategies for policy discussion. Collect and track progress on universal eye health alongside progress on meeting the goals outlined in the global action plan.

4) Improve estimates of the gap between actual and needed spending to meet the 2019 target of the global action plan, particularly for low- and middle-income countries and ideally on an individual country basis.
1. INTRODUCTION

1.1 Meeting organization
The consultation was co-organized by WHO Regional Office for the Western Pacific and The Fred Hollows Foundation. The consultation was held on 2–3 December 2014 at WHO Regional Office for the Western Pacific, Manila, Philippines. The consultation was attended by 18 temporary advisers (experts in health financing or eye health, and individuals with experience in implementing national programmes), two observers and six WHO staff. The full list of participants is available at Annex 1.

1.2 Meeting objectives
   1) to understand and review existing eye health financing models; and
   2) to identify relevant models and specific policy options relevant to the Western Pacific Region, that can be taken forward.

2. PROCEEDINGS

2.1 Opening Session – background
In 2013, WHO Member States endorsed *Universal Eye Health: A global action plan 2014–2019* and established a global target of reduction in the prevalence of avoidable visual impairment by 25% by 2019. While this is a significant achievement, there is no accompanying financing and resource allocation strategy to meet this goal.

Participants at the consultation considered implementation of the objectives of the global action plan into two parts:

   1) ensuring that eye-health systems are adequately resourced and working productively and equitably, as will be required over the longer term to ensure universal eye health; and
   2) a time-limited focus on clearing the large number of untreated people with avoidable visual impairment in the near-term, known as the backlog.

The appropriateness of this two-track approach is reinforced by the changing nature of avoidable visual impairment. The future incidence of vision impairment is expected to be driven increasingly by noncommunicable diseases, such as diabetes. However, outstanding backlogs of untreated cases are still largely comprised of untreated cataracts and refractive error – discrete conditions with relatively straightforward treatments from a financing perspective. This implies that while the eye health needs of populations will increasingly include a complex mix of prevention, treatment and management of chronic disease, at present there are opportunities to make meaningful reductions in the prevalence of avoidable visual impairment in a relative short timeframe through stand-alone and targeted programmes. Action on one track should relatively benefit the other. More details are provided in Annex 3, Brief 2.

With this in mind, discussions centred on practical and cost-effective ways to achieve the goals of the global action plan. Seven themes emerged from the discussions, which underpin the recommendations for Member States, NGOs and WHO, and which should form the agenda for future action.
2.2 Structurally, governments play a critical role in eye-health systems: providing stewardship and being responsible for ensuring equitable access to eye-health systems.

Participants agreed that universal eye health should be the ultimate objective in eye care, as is stipulated in the global action plan. However, several barriers prevent eye health from being universally accessible. Barriers preventing service utilization include the cost of services, knowledge of available services, and adverse perceptions (such as the idea that increasing visual impairment is just part of ageing, or the quality of available services is poor). Barriers on the supply side availability include inadequate funding, inefficient use of available capacity (particularly in the public sector and the primary health system), and urban areas being favoured over rural (or simply attracting and retaining more skilled eye-health workers). For more details on barriers and their effects please see Annex 3, Brief 4.

Participants agreed that the availability and sustainability of funding is a necessary condition for progress towards universal eye health: by influencing the overall size of the eye health system; and affecting the productivity and efficiency of eye-health systems. However, universal eye health is also determined by keeping costs as low as possible without jeopardizing the system’s sustainability, quality is kept high, that services are available and they are equitably distributed.

Arguably, governments have the sole responsibility for the stewardship of the eye health system (private and public) and for ensuring that the system meets its overarching public health objectives. To that end, a variety of policy levers were discussed that governments can use to ensure that eye-health systems are effective and equitable. These include:

- Ensuring the best available balance between contributions of private and public providers.
- Ensuring sufficient cadres of skilled human resources to meet the eye-health demands of the population and ensuring that regulatory hurdles do not prevent cadres from being allocated according to their most productive use.
- Controlling costs and ensuring quality through strategic purchasing and procurement practices.
- Ensuring health systems are equitable with special provisions for people with low socioeconomic status and disadvantaged groups (via targeted purchasing of services for specific groups, manipulating incentives via the level and distribution of rebates, and the direct provision of services).
- Ensuring quality across the system (e.g. regulation, certification and monitoring).
- Determining the extent of the funding envelope allocated to eye health, funded from general taxation revenue or earmarked taxation (such as social health insurance).

2.3 The specific mix of private and public providers should be determined by local conditions – it is critical that people can access the available services.

Across the Western Pacific Region there is considerable diversity in the structure of eye-care service provision. In many countries the private sector is a prominent provider of services, working alongside government service providers. In other countries, in particular those in Asia with a socialist legacy and across the Pacific, the public sector is the dominant provider.

Irrespective of the market, a defining feature in improving the accessibility of eye-care services is that access to services is not linked to people’s capacity to pay. Accordingly, shifting the purchasing of services away from patients and towards a pre-paid pool of resources (often managed by government) is a central feature of many national insurance systems.
However, the experiences of a number of countries illustrate that there are a number of important additional issues, beyond whether eye-health services are notionally included in a health insurance system, that need to be considered:

- Thailand, which is successfully moving towards universal health coverage, uses a negative list to determine which health services are purchased by the Universal Coverage Health Scheme (a negative list means all services, including eye-health services, are covered unless explicitly excluded). However, despite the inclusion of eye-health services in the scheme, access to services is still incomplete and inequitably distributed. This explains why a considerable backlog of untreated cataracts (approximately 70,000) exists, largely concentrated in low-income rural communities.
- The Philippines faces the challenge of balancing the more productive private eye health system against the more equitable public system. Public hospitals, which serve the people with low socioeconomic status through the Philhealth system, struggle to retain trained staff, who leave for the private sector.
- In China, insurance systems largely cover some of the costs of eye health, in particular cataract surgery. However, pockets with large untreated backlogs of visual impairment persist, particularly in low-income rural areas. An important barrier appears to be patients’ perceptions of local surgical quality.

In each case, participants suggested looking beyond the purchasing of services to focus on the actual utilization of available eye care services and whether the supply-side of eye-health was operating productively. Some suggestions to overcome the challenges identified above included relocating primary-level tasks (such as screening and referrals) closer to patients in Thailand; more effective revenue sharing in public hospitals to maintain a better balance between the public and private systems in the Philippines; and a focus on measuring and ensuring quality patient outcomes in China.

2.4 The extent to which eye health services should be integrated into broader health systems to make systems more efficient and equitable should be considered.

The global action plan talks about “improving access to comprehensive eye-care services that are integrated into health systems” (emphasis added). Some participants questioned the singular focus on integrating eye-health services into broader health systems. It was argued that there may be good historical and operational reasons why some features of eye health should continue to stand alone.

A more sophisticated view of the way eye-health services should interplay with the broader health system – with efficiency and equity at the centre – might be required. Participants generally agreed that services associated with the ongoing management of chronic eye conditions, such as diabetic retinopathy, and which require regular contact with primary health care providers, are suited to a broader integrative approach. In contrast, highly specialized transactional services, such as cataract surgery and spectacles, may be better suited to remaining somewhat vertical programmes (with stand-alone service provision, supply chains and financing structures). However vertical systems should not be truly isolated but rather structured to operate in harmony with the broader health system (including sharing infrastructure, training and broader government oversight).

Participants noted that such a customized approach to integration might be more responsive to the on-the-ground reality (that the provision of such services is often separate from the core of the health system and that there are likely to be good efficiency grounds for it to remain that way).

2.5 Innovative finance can increase the funds available in eye health and improve the effectiveness of existing funding.

Innovative financing should serve a broader purpose i.e. it should not be the purpose. Innovative finance is a tool to achieve a desired outcome where traditional finance is ineffective. Products should be tailored to solve issues of service delivery, not the other way around. A clear understanding at the
outset of the specific outcome sought – and the reasons for seeking this outcome – is paramount. Stakeholders must consider in each specific case the risk, costs and other barriers that may be preventing beneficial outcomes. A strong evidence base is essential.

Outside of NGO programme costs, there is uncertainty about the amount of funding eye health receives (see Annex 3, Brief 3). Nonetheless, the large untreated backlogs of vision loss and the skew towards poorer locations and disenfranchised cohorts indicates that, at present, eye health is not a sufficiently high public health priority and the level and distribution of resources flowing into eye health is sub-optimal. A substantial share of the spending burden is likely being borne by patient out-of-pocket expenditure. This raises the risk of people’s eye-health needs contributing to catastrophic health spending.

Against this backdrop, and that traditional overseas development assistance is becoming increasingly difficult to secure, participants discussed non-traditional funding opportunities including private finance, which is increasingly recognized as a potentially powerful way to drive improvements in practice and increases in the scale of activities.

There is a large and rapidly growing market of private investors interested in creating positive impact beyond financial return – known as social impact investors. Impact investments intentionally target specific social objectives along with a financial return and measure the achievement of both. This market is being increasingly viewed as an opportunity to fund a new wave of economic progress in low- and middle-income countries.

In general, eye health in low- and middle-income countries has not been a prominent destination of private investment flows. It is unclear whether this reflects information asymmetries and broader knowledge gaps regarding the development implications of eye health. The likely implication, however, is that private enterprises, including those operating via social enterprise models, have had to rely on relatively expensive forms of finance, including retained earnings, local debt and donations, to fund their start-up and growth. This is likely to have constrained the overall size of the provider market. The benefits innovative financing mechanisms can have on eye health include:

- The "crowding in" of private investors to increase scale.¹
- Incentivizing innovation.
- Changing (and aligning) incentive structures to generate socially beneficial outcomes.
- Improving the quality of service delivery.
- Increasing efficiency and reducing costs.

Innovative finance is not necessarily financial innovation – most useful financial instruments (such as bonds, loans and guarantees) have existed for a long time, but have not been applied to social development. In this context, genuine financial innovation, such as development impact bonds, are a specific solution to a specific problem. They are likely to be best suited to problems that traditional development finance and the innovative application of existing financial instruments cannot solve.

However the quest for innovative financing should not distract from developing effective local financing streams.

While innovative private financing could positively influence eye health markets, participants agreed that the greatest potential, if appropriately tapped, still resides with domestic funding sources. Local funding can come from a variety of sources, including taxation, user charges, insurance and medical savings. Innovative external sources of funding should not be seen as a replacement for the need for governments to develop effective local financing sources.

¹ The $15 million Eye Fund, managed by Deutsche Bank, provides an example of an innovative financing mechanism using credit enhancements to encourage private investors to undertake social investments. In that example, a combination of guarantees and first-loss positions taken by philanthropically minded investors and government organizations encouraged retail investors to contribute funds that were used to provide loans to finance the expansion of three cataract hospitals. In 2010, money was lent to three cataract hospitals that are applying the Aravind Eye Health System model.
The amount of domestic funds available to fund the equitable purchasing of eye health services is directly influenced by the capacity to raise taxation revenue as well as the prioritization of health spending within budgets (and eye-health spending within health budgets). As countries macroeconomic conditions improve, the sources of available funding are likely to change and the funds available are likely to increase. For an adequate and stable pool of public funding for eye health to develop over time, the tax base in countries must be widened, with gaps between potential revenue and revenue collected narrowed, and eye health must be seen as a public health priority.

2.6 System expansion does not always improve access. Financial incentives should be tailored to ensure demand and supply in eye-health markets works more effectively and equitably to achieve desired eye-health outcomes. Priority should be given to what we know works.

In addition to large-scale changes to eye-health systems, there are likely to be opportunities to make small adjustments (“tweaks”) to eye-health systems that can produce significant improvements. These tweaks can occur on the demand side (to improve the use of services); and the supply side (to ensure an appropriate supply response to unmet demands of the population).

2.6.1 Demand-side financing

Participants agreed that the demand side of eye health generally requires more attention. An array of demand-side financing options are available that could improve eye-health outcomes. More resources and attention should be dedicated to gathering information on patient behaviour and use of services – to assess why some systems work and others do not. Issues that will help shape demand-side interventions in eye health include:

- Almost all avoidable visual impairment is slow-onset (like a chronic illness); visual impairment usually does not occur overnight. Yet unlike chronic illness, most vision loss can be corrected almost immediately.
- Patients commonly have some willingness to pay for services, which is only likely to increase over time as economies develop. Broad principles can be useful for thinking about willingness to pay. For example in Bangladesh, patients are willing to pay one day of income for spectacles and one month of income for cataract surgery.
- In some locations the quantity of resources is less of a barrier than their distribution. In these situations the reasons for limiting access to available resources need to be carefully examined.
- Quality is paramount: there is evidence that patient perceptions of quality, rather than financial considerations can determine whether people use available services.

2.6.2 Market segmentation and differential pricing

Capitalizing on evidence of patients’ willingness (and, in some cases, increasing capacity) to pay for certain eye-health services, social enterprise models have shown that it is possible to improve access to services while remaining financially sustainable. The combination of rigorous cost control, tiered pricing and cross-subsidies from higher value-adding goods and services has allowed high-volume cataract hospitals to remain profitable while providing free services to people with low socioeconomic status (between 10–40% of all services). The broad aim of this model, apart from extending treatment to people with low socioeconomic status, is to transform the competitive landscape of the whole eye-care market by offering quality services to patients at the lowest possible cost.
Prominent examples include:

- Aravind eye hospital in India (which generated a 33% annual net operating margin on cataracts); the He System in China (17% margin); Magrabi eye hospital in Egypt (20% margin); and Lumbini hospital in Nepal (generating a $222 000 profit on cataracts).

- Tiered pricing has also allowed significant numbers of eye surgeries to be performed in other locations e.g. 4000 by Visualiza in Guatemala; 160 000 free surgeries by Ispahani Islamia Eye Institute and Hospital in Bangladesh; and 117 000 by the SadGuru Trust in India (80% of which are free or below cost).

The financial foundations of high volume cataract surgery are providing hospitals with the ability to offer other services, including training, outreach and sub-speciality services. The model is also being successfully trialled in other medical technologies such as hearing aids and prosthetics.

Globally, there are more than 300 examples of this type of pro-poor social enterprise model in cataracts, proving it is not limited to a particular country or economic structure. However, there are few examples in the densely populated regions of the Western Pacific Region.

A number of features are common to the social enterprise model. Sustainable tiered pricing requires paying customers, which in turn requires an affordable price. An approach used in many hospitals is that the per-unit cost of cataract surgery be kept equal to the average monthly income of the bottom 60% of the local population. This focus on reducing production costs to fit the price that can be charged for services is the reverse of the more conventional "cost plus" way of pricing goods and services.

The key to cost control is in looking closely at the supply chain in each context and finding ways to squeeze out the "non-value-adding margins" (i.e. unnecessary profits of suppliers and distributors). Technological innovation is also important in driving costs down. For example, by developing a US$ 10 lens, Aurolab unleashed a wave of competition that saw lens prices fall to US$ 2. Lower consumables costs underpinned a rise in the number of cataract surgeries in India from 800 000 in 1992 to 6 million in 2002. The high-profile individual successes of the model, and the breadth with which it is being applied, indicates that it is possible to shift away from maximising returns on investment to achieving a blend of profitable procedures and serving a broader social mission. The system has become self-sustaining, with mentor hospitals teaching mentee hospitals how to replicate these successes. In a few years the mentoring programme has led to more than 187 000 additional free surgeries being undertaken compared with a baseline.

In general, barriers to change have been political: opposition to charging people with low incomes (this was the case in Nepal, but attitudes changed when it became apparent that people accepted a tiered-pricing structure); and the political economy challenges of introducing low-cost services in places where practitioners wield considerable pricing power.

2.7 In each case, and each context, success depends on overcoming the evidence gaps that persist. Understanding the drivers of supply and demand in eye-care services is critical. Understanding the factors preventing change is also important.

In international development, context is critical. Important differences exist between and within countries. "One size fits all” solutions are unlikely in eye-health financing. However, a common refrain among participants was that there are significant information gaps in almost all contexts. These included information gaps on: the amount spent on eye health; how eye-care markets function in individual contexts; and specific opportunities for innovative finance to improve eye-care markets.

There is likely to be considerable scope for tweaking eye-care systems to deliver more eye health. However, to do so requires a strong understanding of the way that eye health is currently financed and

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2 Tilganga institute of ophthalmology in Nepal, a key partner of The Fred Hollows Foundation, also operates on a similar social enterprise business model, using a cross-subsidy model to finance low-cost cataract treatments to the poor. In 2012, 34% of surgeries were non-full paying (of which around half were free) with a net operating margin on cataract surgery of more than 10%.
the specific outputs of eye-health systems – including the size and role of the private sector and determinants of patient demand. However, the aggregate statistics captured to date overlook such detail. For instance, recent research in Dhaka identified more than five times more practicing eye-care service providers than were documented, with many of these previously unknown providers working in the private practice.

For both cataract surgery and spectacle provision, there is a lack of precise information on the scale of activities being undertaken and their cost-effectiveness in different contexts. This inhibits government ability to determine policy and the ability of small actors to appropriately target interventions.

There is a lack of an adequate international mechanism for sharing information from trials of new approaches for the benefit of other actors in eye care. Work is ongoing in the wider health system that could usefully be reviewed from the perspective of the eye-health system.

2.8 A strong emphasis on effective advocacy is needed to raise the profile of eye health, influence health policy-makers and make eye health a public health priority.

There is a common understanding that health is a prerequisite for development. Yet correcting vision loss is sometimes seen as a “nice to have”; not something that deserves the same priority as other diseases that are traditionally thought of as being linked to premature death or impeding development.

Reducing avoidable visual impairment is a potentially powerful tool to foster and promote more inclusive growth. It is also one of the “most likely to succeed” stories in development policy: highly effective strategies exist; the results are achievable and affordable; and improvements in vision can be directly attributed to increases in the well-being and longevity of affected individuals as well as positive economic development. More details can be found in Annex 3, Brief 1.

The persistence of avoidable visual impairment illustrates that stronger advocacy is therefore required. There is a broad spectrum of advocacy opportunities. As the ultimate stewards of the health system, governments are an important advocacy target. Accordingly, the most effective advocacy at this stage is to support governments in the Western Pacific Region to meet their targets as required under the global action plan. This will involve working collaboratively across the sector to build a road map for policy-makers, to improve the financing, delivery and utilization of eye-care services. However, many areas of health compete for government attention and resources. Participants proposed that eye health advocacy with governments consider five key issues:

1) The political context of public policy, including critical parameters such as efficiency and cost effectiveness.
2) The need to frame issues in ways that help governments develop policy.
3) The timing of the election cycle and the identity of the main decision-makers and influencers.
4) The importance of developing a broad constituency. This might need to be geographically based and is likely to include influential agencies and individuals.
5) Solutions not problems are more likely to achieve successful advocacy. An example might be a practical method to take a pilot programme to scale.

Specialists in eye health, and the non-government organizations supporting them, may also be unaware of the most recent advances in financing for development. Advocacy within the eye-care sector is important – on non-traditional sources of finance and the potential for improvements in efficiency to increase amount of eye health for a given pool of funds. NGOs can play important bottom-up roles in policy development. NGOs are well placed to reduce the eye-health evidence gap. At the frontline of development programming, NGOs are able to provide direct evidence of what works, what does not, and what could work better. NGOs can directly contribute to the evidence base for improved policy and greater programme effectiveness. Further, through their involvement in designing, testing and
evaluating innovative financing and delivery models on a small scale, NGOs can make a valuable contribution to increasing the impact of larger-scale programmes.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The persistence of avoidable visual impairment – a public health challenge with an available solution – is mainly a problem of resource allocation. Insufficient resources are allocated to eye health. There is also a misallocation of available resources.

Through the combined efforts of donors, multilateral organizations, NGOs, private actors and governments, effective financing strategies can be developed to help Member States meet the objectives agreed to in the global action plan. This meeting represented the first step on that journey; bringing together, for the first time, a cross-disciplinary and cross-regional group of experts to discuss the financing of eye health and propose specific policy recommendations.

Participants discussed the predicament of visual impairment in the Western Pacific Region, focusing on health trends, financing strategies and barriers to service access. Lessons were drawn from successful strategies that have expanded service access in eye health and beyond. There is no single specific solution to the financing and delivery of eye health. However, some common epidemiological parameters of visual impairment mean that the broad trajectory is likely to be similar across countries. To clear untreated backlogs in the near-term, there is a need to improve access to cataract surgery by overcoming barriers to services provided by governments, the private sector and nongovernmental organizations. Longer term, as the changing nature of visual impairment shifts demand towards repeated usage of services, it will be critical that eye health is integrated into, or at least works in synergy with, broader health systems.

The strong take-home message from the consultation was that common epidemiological parameters of visual impairment mean that the broad trajectory of eye-health financing and delivery is likely to be similar across countries. However, the details will differ. Clearing untreated backlogs of cataracts and refractive error is an opportunity to make meaningful reductions in the prevalence of avoidable visual impairment in the near term. While system expansion is important, there must be a complementary focus on finding ways to get more out of existing eye-health systems. To that end, understanding both the demand for and supply of eye-care services is critical. However, in all cases, efforts to address untreated backlogs must be sensitive to the need to develop stronger health systems – a prerequisite for universal access.

3.2 Recommendations

3.2.1 Recommendations for Member States

1) Make the elimination of avoidable visual impairment a public health priority and, through effective stewardship, dedicate efforts to optimising cataract surgical coverage in all contexts.

2) Strengthen the economic drivers of supply and demand in eye health by distinguishing clearly between financing service provision and financing service access.

3) Invest more heavily in data collection. This includes greater collection and reporting of financial flows as well as rapid assessment of avoidable blindness (RAAB), eye care service assessment tool (ECSAT), and analyses of patient characteristics and barriers to service access.

4) Improve allocative efficiency of resources in individual contexts – for example, what is the optimal allocation balance of labour inputs (cadres), physical capital (theatres) and service providers.
5) Make detection and management of diabetic retinopathy an integral part of the care of a person with diabetes.

### 3.2.2 Recommendations for NGOs

1) Prioritize and tweak financing and delivery models that are known to work, with a view to replication and enlargement. In particular the high volume low-cost cataract social enterprise models should be expanded in scale and scope into places where the conditions are ripe for change – that is where the model is absent and services are clearly overpriced.

2) Increase the research and advocacy focus, with governments, on what drives (and prevents) change in eye health, including the established interests of service providers.

3) Study how providers are paid for services – and devise purchasing strategies to protect people with low socioeconomic status. In countries where there are prepayment schemes this may focus on advocating the inclusion of eye-health services into benefits packages and in countries without large prepayment schemes, it will focus on relieving out-of-pocket expenditure.

### 3.2.3 Recommendations for WHO

1) Maintain the dialogue between eye-health practitioners and health specialists initiated at this consultation. Contact among a diverse group of experts, and an active agenda of work, will allow good research, policy and advocacy ideas on innovative financing to emerge.

2) Directly advocate to governments about the need for greater focus on eye health and a financing strategy with two parts: (i) a focus on improving the capacity of eye-health systems and integrating eye health into stronger health systems over the longer term; and (ii) a time-limited focus on clearing backlogs for the nearer term.

3) Undertake country-specific assessments to more deeply understand service provision and use, coverage rates, human resource requirements and financing mechanisms, and develop tailored strategies for policy discussion. Collect and track progress on universal eye health alongside progression on meeting the goals outlined in the global action plan.

4) Improve estimates of the gap between actual and needed spending to meet the 2019 target of the global action plan, particularly for low- and middle-income countries and ideally on an individual country basis.
ANNEX 1

LIST OF TEMPORARY ADVISERS, REPRESENTATIVES/OBSERVERS AND SECRETARIAT

1. TEMPORARY ADVISERS

Dr Munir AHMED, Country Director, Orbis International, Rangs Barnali, Road 137, Gulshan-1, Dhaka, Bangladesh, Tel. No.: +88029858033, E-mail: munir.Ahmed@orbis.org

Dr Peter ANNEAR, Associate Professor, Nossal Institute for Global Health, 161 Barry St, Carlton 3010, Victoria, Australia, Tel. No.: +61 410561189, E-mail: pannear@unimelb.edu.au

Dr Noel CHUA, Chairman, National Committee for Sight Preservation, Department of Health San Lazaro Compound, Sta. Cruz, Manila, Philippines, Tel. No.: (02) 781-8618, E-mail: noel.g.chua@gmail.com

Mr Thomas ENGELS, Health Economist, Sightsavers International, Palmera Grande, Hollande Rd., Hove, United Kingdom, Tel. No.: +44 75 269 733 08, E-mail: tengels@sightsaver.org

Mr David GREEN, Social Entrepreneur, Aurolab, Aravind Eye Hospital, No: 1, Sivagangai Main Road, Veerapanjan, Madurai - 625 020, Tamil Nadu, India, Tel. No.: + 91 - 452 – 2446100, E-mail: davidgreen3@gmail.com

Professor HE Mingguang, Centre for Eye Research Australia, University of Melbourne, Gisborne St., East Melbourne 3002, Victoria, Australia, Tel. No.: +86 13926020602, E-mail: mingguang_he@yahoo.com

Dr Anis KAZI, Senior Manager, Policy Advocacy and Research , Heartfile, One Park Road, Chak Shahzad,, Islamabad 44000, Pakistan, Tel. No.: 92-333-524-9292, E-mail: anis@heartfile.org

Dr KIM Chang-yup, Professor, Seoul National University School of Public Health, 1 Kwanak-ro, Kwanak-gu, Seoul 151-742, Republic of Korea, Tel. No.: +82-2-880- 2722, E-mail: cykim@snu.ac.kr

Dr David LANSLEY, Health Financing Policy Officer, The Fred Hollows Foundation, Locked Bag 5021, Alexandria NSW, Sydney, 2015 Australia, Tel. No.: +61 3 8330 8134, E-mail: dlansley@hollows.org

Mr Sebastian LING, Director, Strategic Alliance, Vision for a Nation Foundation, 27 Old Gloucester Street , London WC1N 3AY, United Kingdom, Tel. No.: +07980 752 390, E-mail: sebastian.ling@vfanf.org

Dr Lachlan MCDONALD, Senior Health Economist, The Fred Hollows Foundation, Locked Bag 5021, Alexandria NSW, Sydney, 2015 Australia, Tel. No.: +61 425301170, E-mail: lmcdonald@hollows.org

Ms Liesbet Denise PEETERS, Managing Partner, Dalberg Capital Partners, A Dalberg Group of Companies, 71 Endell Street, London WC2H 9AJ, United Kingdom, Tel. No.: 44 7766 47 78 75 E-mail: liesbet.peeters@dalberg.com

Professor Kai Hong PHUA, Professor of Health and Social Policy, Lee Kuan Yew School of Public Policy, National University of Singapore, Level 2M, Oei Tiong Ham Building, Singapore 259772 Tel. No.: +65 6516 1540, E-mail: sppkh@nus.edu.sg
Annex 1

Professor Kai Hong PHUA, Professor of Health and Social Policy, Lee Kuan Yew School of Public Policy, National University of Singapore, Level 2M, Oei Tiong Ham Building, Singapore 259772, Tel. No.: +65 6516 1540, E-mail: sppkh@nus.edu.sg

Mr Oscar PICAZO, Senior Research Consultant, Philippine Institute for Development Studies, 105 Amorsolo St., Legaspi Village, Makati City, Philippines, Tel. No.: 09076541378 E-mail: ofpicazo@gmail.com

Ms Alex RANKIN, Global Lead - Advocacy, Policy & Research, The Fred Hollows Foundation, Locked Bag 5021, Alexandria NSW, Sydney, 2015 Australia, Tel. No.: +61 3 8330 8109 E-mail: arankin@hollows.org

Dr Viroj TANGCHAREONSATHIEN, Senior Expert on Health Economic, International Health Policy Program, Ministry of Public Health, Mucing Road, Nonthaburi 11000, Bangkok, Thailand, Tel. No.: +662-590-2366-7, E-mail: viroj@ihpp.thaigov.net

Dr Kate TAYLOR, Consultant, The Fred Hollows Foundation, Locked Bag 5021, Alexandria NSW, Sydney, 2015 Australia, Tel. No.: +61 425301170, E-mail: dr.k.taylor@gmail.com

2. REPRESENTATIVES/OBSERVERS

THE FRED HOLLOWS FOUNDATION
Ms Maria Remedios SUPLIDO, Programme Manager (Philippines)
East Avenue Medical Center, Quezon City, Philippines
Tel. No.: (63) 917 860 9250, E-mail: msuplido@hollows.org

NATIONAL EYE INSTITUTE OF THAILAND INITIATIVE
Dr Puwat CHARUKAMNOETKANOK, Project Director
Bangkok, Thailand, Tel. No.: +662-590-2366-7
E-mail: drpuwat@yahoo.com

3. SECRETARIAT

Dr Susan MERCADO, Director, Division of NCD and Health through the Life-Course, WHO, Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines
Tel. No.: (632) 528 9980, Fax No.: (632) 521 1036, E-mail: mercados@wpro.who.int

Dr Vivian LIN, Director, Division of Health Systems, WHO, Regional Office for the Western Pacific P.O. Box 2932, 1000 Manila, Philippines, Tel. No.: (632) 528 9951, Fax No.: (632) 521 1036
E-mail: linv@wpro.who.int

Dr Andreas MUELLER, Technical Lead (Responsible Officer), Blindness Prevention and Control Disabilities and Rehabilitation, Division of NCD and Health through the Life-Course, WHO, Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines
Tel. No.: (632) 528 9885, Fax No.: (632) 521 1036, E-mail: muellera@wpro.who.int
Annex 1

Ms Pauline KLEINITZ, Technical Lead, Disabilities and Rehabilitation, Division of NCD and Health through the Life-Course, WHO, Regional Office for the Western Pacific
P.O. Box 2932, 1000 Manila, Philippines, Tel. No.: (632) 528 9865, Fax No.: (632) 521 1036
E-mail: kleinitzp@wpro.who.int

Dr KE Xu, Coordinator, Health Policy and Financing, Division of Health Systems
WHO, Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines
Tel. No.: (632) 528 98081, Fax No.: (632) 521 1036, E-mail: xuk@wpro.who.int

Dr Annie CHU, Health Economist, Health Policy and Financing, Division of Health Systems,
WHO, Regional Office for the Western Pacific, P.O. Box 2932, 1000 Manila, Philippines
Tel. No.: (632) 528 98081, Fax No.: (632) 521 1036, E-mail: xuk@wpro.who.int
## ANNEX 2

### PROGRAMME OF ACTIVITIES

**Day 1 - 2 December 2014**

**Description:** Setting up the context and a framework for thinking. Exploring examples of things that have worked in eye health and in other health areas that could be applicable to eye health

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Potential speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30–9:00</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>9.00–9:30</td>
<td>Welcome remarks; Opening addresses; Self-introductions of participants and election of officers; Group photograph (conference foyer)</td>
<td>Dr Andreas MUELLER; Dr Susan MERCADO; Ms Alex RANKIN</td>
</tr>
<tr>
<td>9:30–09:45</td>
<td>Scene setting and expectations</td>
<td>Dr Kate TAYLOR</td>
</tr>
<tr>
<td>09:45–10:15</td>
<td>Visual impairment in the Western Pacific Region – current strategies and financing models, the financing gap and other barriers</td>
<td>Dr Lachlan MCDONALD; Dr Andreas MUELLER</td>
</tr>
<tr>
<td>10:15–10:45</td>
<td>Key health trends in the Western Pacific Region</td>
<td>Dr Viroj TANGCHAROENSATHIEN</td>
</tr>
<tr>
<td>10:45–12:30</td>
<td>Successfully innovative financing models from eye health</td>
<td>Mr Peter ANNEAR (chair); Dr Munir AHMED; Mr Thomas ENGELS; Mr David GREEN; Professor He Minguang</td>
</tr>
<tr>
<td>12:30–13:30</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>13:30–14:00</td>
<td>Universal Health Coverage and where do (or could) eyes fit in?</td>
<td>Dr Annie CHU</td>
</tr>
<tr>
<td>14:00–15:30</td>
<td>Other opportunities to find the finance: Financing models and ways of working that are potentially applicable to eye health</td>
<td>Ms Liesbet PEETERS; Ms Andrei XYDAS</td>
</tr>
<tr>
<td>15:30–16:00</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>16:00–17:00</td>
<td>Potential opportunities across different resource settings and health system models</td>
<td>Dr Noel CHUA; Dr PHUA Kai Hong</td>
</tr>
<tr>
<td>17:00–17:30</td>
<td>Wrap up of Day 1 discussions</td>
<td>Dr Kate TAYLOR</td>
</tr>
<tr>
<td>17:30</td>
<td>Dinner</td>
<td></td>
</tr>
</tbody>
</table>
**Annex 2**

**Day 2 – 3 December 2014**

**Description:** Building on day 1. Exploring the roles and potential contributions of different actors, harnessing new and existing funding, and what success might look like and how it might be progressed and achieved

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00–09:30</td>
<td>Reflections on Day 1 and lessons learned/ opportunities for collaboration and building something greater than the sum of its parts</td>
<td>Dr Chang-yup KIM</td>
</tr>
<tr>
<td>09:30–10:30</td>
<td>Government-financing, universal coverage and potential pathways to universal eye health</td>
<td>Dr Vivian LIN (chair) Mr Peter ANNEAR Dr PHUA Kai Hong</td>
</tr>
<tr>
<td>10:30–11:00</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>11:00–12:00</td>
<td>Roles and contributions of the private sector</td>
<td>Mr Oscar PICAZO Dr Anis KAZI</td>
</tr>
<tr>
<td>12:00–13:00</td>
<td>Brown bag session on Assistive Technology for People with Disabilities (lower lounge of the conference hall) Light lunch will be served.</td>
<td>Disabilities and Rehabilitation, WHO/WPRO</td>
</tr>
<tr>
<td>13:00–13:30</td>
<td>Continued.... Roles for and contributions of the private sector</td>
<td>Mr Oscar PICAZO Dr Anis KAZI</td>
</tr>
<tr>
<td>13:30–15:00</td>
<td>Opportunities (and priorities) across different resource settings and health system models to widen eye health service provision and utilization</td>
<td>Dr Ke XU (chair) Dr Puwat CHARUKAMNOETKANOK Dr Nathan CONGDON Dr Chang-yup KIM</td>
</tr>
<tr>
<td>15:00–15:30</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>15:30–16:00</td>
<td>What will it take to get ideas into action?</td>
<td>Mr Sebastian LING</td>
</tr>
<tr>
<td>16:00–16:30</td>
<td>Conclusions</td>
<td>Dr Kate TAYLOR</td>
</tr>
<tr>
<td>16:30</td>
<td>Closing remarks</td>
<td>Dr Susan MERCADO</td>
</tr>
</tbody>
</table>
ANNEX 3

BRIEFING PAPERS

**Briefing Paper 1:** "Achievable and Attributable": The rationale for a focus on reducing avoidable blindness

**Briefing Paper 2:** Reducing Avoidable Blindness: A challenge with two parts and its implications for resource allocation

**Briefing Paper 3:** Better to light a candle than curse the darkness: estimating spending on global eye health

**Briefing Paper 4:** Practical pathways to universal eye health- improving the availability, accessibility, affordability and acceptability of eye care services

**Briefing Paper 5:** Eye care within a Health System Strengthening Approach
**Overview**

Policy, Advocacy & Research Team, The Fred Hollows Foundation

Attached are five Briefing Papers designed to provide background to issues central to the discussions of the Technical Consultation on Models of Innovative Financing for Eye Health. They provide an overview on topics including: the avoidably blind population: emerging challenges for the prevention of avoidable vision loss; and the resources, structure and systems need to reach the targets and goals as outlined in the Global Action Plan.

**Briefing Paper 1** sets the scene with an overview of the two-way relationship between avoidable vision loss and blindness and economic development. While the devastating economic impact of blindness on individuals, families and the wider economy is readily understandable, the fact that poverty is a major contributing factor to avoidable blindness is less well appreciated. The clear message is that reducing avoidable vision loss is positive for stronger and more inclusive economic growth.

**Briefing Paper 2** takes the issue of reducing avoidable vision loss further by analysing the dynamics of vision loss. Understanding the flows into and out of avoidable blindness is the starting point for thinking about how to best use the inevitably limited resources available for eye health.

Improving resource allocation is essential to achieving maximum impact from eye health systems, but expanding systems to ultimately eliminate avoidable vision loss and blindness requires reliable estimates of both the extent of current funding to eye health systems, particularly in low- and middle-income countries. **Briefing Paper 3** looks at the best available estimates of current and required future global eye health spending. The extent of uncertainty around these estimates due to significant data limitations means that the exact scale of this task is not certain. More comprehensive and reliable data are needed.

**Briefing Paper 4** focuses on the structure of eye health systems and how they might be improved. Significant barriers to accessing eye health services exist, both on both the demand and supply sides. They are particularly high for women. Ultimately, a universal health system that includes eye health services and utilises some form of pooled insurance mechanism will be required to overcome these barriers. This will take time to achieve, however. In the interim, smaller actors can play an important complementary role by improving the productivity of existing systems, overcoming specific access barriers, and helping devise and test practical and innovative financing and delivery models.

Finally, while universal health systems are the ultimate goal, how to integrate eye health services into a much larger health system is not straightforward. **Briefing Paper 5** draws attention to the many health system synergies – common equipment, consumables, well-trained support staff, utilities including electricity and water, and more – that can be utilised to assist in the full integration of eye health into the wider health system.
“Achievable, Affordable and Attributable”: The rationale for a focus on reducing avoidable blindness

Policy, Advocacy & Research Team, The Fred Hollows Foundation
Authors: Dr Lachlan McDonald, PhD; Dr Kate Taylor, MBBS, MPH

It is widely recognised that investing in health fundamentally contributes to socioeconomic development. Within the context of discussions on health and development, there are a number of reasons why a specific focus on reducing avoidable blindness is warranted.

This paper describes the way that vision loss and economic development are tightly linked, and the circular link between vision loss and poverty. It explains how reducing avoidable blindness is both an achievable and affordable goal and steps through the ways that treating vision loss contributes to economic and social benefits for affected individuals and the macro economy.
The circular links between vision impairment and poverty

The vast majority of blind and visually impaired people live in low- and middle-income countries. In fact, vision loss is tightly linked to economic development though a cycle in which poverty increases the risk of visual impairment and visual impairment also causes poverty (Figure 1).

Poorer countries are more likely to have worse eye health.\textsuperscript{a,b} Within countries, the poorest members of any society are more likely to suffer from vision loss.\textsuperscript{c,d} People in poverty are at greater risk given their relatively worse nutrition and worse access to health services, education, adequate housing, water and sanitation.\textsuperscript{e,f} While most eye disease is associated with ageing, in low- and middle-income countries these factors combine to result in individuals being affected by vision loss ten to twenty years earlier on average than those in richer countries.\textsuperscript{g,h}

![Figure 1: The cycle of poverty and vision impairment](source: Kate Taylor)

At the other end of the age spectrum, poorer children are also at greater risk of vision loss. They are more likely to have Vitamin A deficiency and to be unimmunised, increasing their risk of measles-related blindness. They are also less likely to have refractive errors or cataracts detected and remedied.\textsuperscript{i}

Vision loss exacerbates inequities linked to gender. In every region of the world, women have a higher prevalence of blindness and visual impairment than men.\textsuperscript{j} While this reflects a number of factors, including women’s greater longevity, the largest and most prominent factor is that women tend to be poorer and have less access to education and employment than men. Women also face a number of additional barriers that prevent them from being able to access health services, including having less access to and control of family finances, their low status within the community and family resulting in lower priority for seeking health care, and less ability to travel due to cultural factors or family responsibilities.\textsuperscript{k,l,m} It is estimated that more than ninety per cent of women living with blindness also live in poverty.\textsuperscript{n} This illustrates the “double discrimination” women can risk – based both on their gender and also their disability.

People in poorer communities in low- and middle-income countries face heightened risks of future vision loss. Changing lifestyles in low- and middle-income countries are giving rise to emerging epidemics of non-communicable and chronic diseases, including obesity, hypertension and diabetes.\textsuperscript{1,0,3,4,5,6} The growth of diabetes has considerable implications for eye health, with around one third of people with diabetes at risk of vision loss from diabetic retinopathy (see Briefing Paper 2 for more discussion).\textsuperscript{6} Poor populations are also most vulnerable to the effects of climate change, including the effects of changing weather patterns, deteriorations in water and sanitation and forced migration. These effects are likely to influence blindness: increasing ultra-violet light exposure can heighten the risk of cataract formation;\textsuperscript{1} increasing the risk of infectious eye diseases, such as trachoma; and as well as reducing access to health services.

\textsuperscript{1} This is part of broader structural shift sometimes referred to as the “epidemiological transition” in which the greatest burden of disease in a poor country changes from being comprised mainly of infectious diseases and replaced with chronic diseases as the country develops economically.
Vision loss also makes people poor

While poverty is a key determinant of vision loss, the reverse is also true; vision loss is an important factor in tipping individuals and their families into poverty, or deeper into poverty if they are already poor. Blindness and visual impairment excludes individuals from the economic system. It robs people of the opportunity to generate an economic livelihood and restricts their access to markets and resources. It also creates a dependence on carers. Blind people have lower economic productivity and lower earnings relative to the rest of the population. Carers (usually women and girls) of individuals with visual impairment are also economically disadvantaged as the time they spend caring comes at the expense of being otherwise economically productive.

Rather than being instantaneously catastrophic, like a sudden health shock, the way that blindness affects household well-being is more akin to chronic illness in that it causes a gradual erosion in the capital stock (both in terms of human capital and physical / financial capital).

The result is that households containing a visually impaired individual tend to be poorer and more vulnerable to the effects of adverse economic shocks. They have less ability to meet health care costs, which in many developing countries are largely funded through out-of-pocket spending (see Briefing Paper 3). Illness can directly impoverish households by forcing them to spend a high proportion of their income on health or even to go into debt or to sell productive assets to cover their health costs.

Each of these factors means that blindness and visual impairment can trigger a poverty trap from which households and their members struggle to escape. At its worst, there can be disastrous intergenerational consequences, as children – usually girls – are withdrawn from school to care for their visually impaired relatives or to earn money to pay off family debts. This permanently undermines their human development as well as their lifetime earning potential.

Reducing avoidable blindness is achievable, affordable and attributable

The good news is that reducing avoidable blindness is achievable, affordable and can directly improve broader socioeconomic development.

“Achievable”

Around 80 per cent of vision loss is avoidable or treatable. The majority of all reported vision loss is the result of cataract and refractive error, which can be treated with simple surgical techniques and the provision of spectacles, respectively (see Briefing Paper 2).

“Affordable”

There is growing evidence that interventions to treat most vision loss are highly cost-effective, whether measured in terms of the economic return or of the value of restored sight to individuals. A 2009 review of cost-utility calculations in various developing countries found that cataract surgery “easily meets the World Health Organization definition of very cost-effective, no matter how it is calculated, in many instances by a large margin.” Cataract surgery was deemed to be “among the most cost-effective of all interventions examined” in a Mexican study and “among the best buys in health interventions.”

In general, the cost-effectiveness of cataract surgery can be explained by the relative affordability of its impact. The input costs of treating cataracts are among the lowest of all surgical services, the treatment has a high success rate, and is relatively straightforward to perform. The scale of surgical programs can also be increased relatively cheaply. When combined with the considerable improvements that are
“Achievable, Affordable and Attributable”:
The rationale for a focus on reducing avoidable blindness

made in patients’ economic productivity and quality of life, (see below) investments in eye health represent good value for money.

“Attributable”

Improvements in economic development can also be directly attributed to reductions in avoidable blindness. A large and deepening evidence base has emerged to support this, showing that there is a clear link between improving an individual’s vision and improving their well-being. In fact considerable economic and social benefits accrue at all levels of society – to the recipients of eye care treatments and their families as well as the macro economy as a whole.

The micro-level benefits of improved vision

Treating visual impairment allows individuals to become independent and active members of labour markets, of economies and of societies more broadly. Of course, some of the overall labour market benefits are likely to be tempered by the fact that eye care interventions, in particular cataract surgery, are generally targeted at older populations. Moreover, the dominance of informal labour markets means that productivity gains may not always show up in formal measures of output. Nonetheless, there are numerous examples of households benefiting economically from increased economic engagement shortly after treatment.

A recent multi-country study from Bangladesh, the Philippines and Kenya compared households with an individual over the age of fifty who was visually impaired from cataracts with unaffected households. While the cataract-affected families started significantly poorer, one year after surgery they had equal expenditures with unaffected households. This was particularly meaningful for the poorest families, which reported the greatest increases in self-rated wealth. Overall, the greatest benefits were experienced by people who were the most vulnerable (the poor, elderly or female). These material gains were sustained over time. In a six-year follow up to the study, the wealth of those households that had been treated was indistinguishable from unaffected households — the implication being that the economic gains from cataract surgery played an important role in alleviating household poverty.

Another study from India looked at the social as well as the economic benefits to households in the year after cataract surgery for a visually impaired family member. After surgery, treated individuals were more than three times likely to be earning. Other members of the household also were more likely to be working. Of the people who were widowed before surgery, many of them had re-married after surgery. As a whole, households averaged more members in work.

The impacts of population-based treatment programs can also be seen at the community level. Treating river blindness (onchocerciasis) in 11 countries prevented over 600,000 people from becoming blind. This translated to an additional contribution of 5 million years of productive work to the national economies, including by making expanses of land safe for families to return to farming.

The macroeconomic benefits of improved vision

In addition to the important and identifiable benefits that accrue to individuals and their families from having their sight restored, the economy as a whole stands to gain from improving people’s vision. At the macro level, blindness wastes human resources: it removes people who would otherwise work from the labour force and also prevents individuals from being able to access markets and resources.

A recent study by PricewaterhouseCoopers, commissioned by The Fred Hollows Foundation, estimates that the cumulative impact of lost economic activity in low- and middle-income countries from vision loss is $52 billion annually (in 2010 US dollars). Treating vision loss offers an opportunity to both increase

To give this number some context in 2010 US $52 billion was about the cumulative nominal GDP of sub-Saharan Africa (excluding Nigeria and South Africa). So we are talking about some particularly expensive costs from what amounts to the waste of human potential.
overall prosperity and to effectively target the well-being of the poorest and most vulnerable. It is also a potentially important tool for reducing rates of poverty and levels of inequality, to the extent that it allows people at the lower end of the socioeconomic distribution to move back into the economic system.

The same study shows that the benefits of investments in eliminating avoidable blindness, through strengthening the capacity of eye health systems to clear the backlog of untreated cases and treat new cases, outweighs the costs by a factor of four across all developing countries, and potentially by even more in some individual cases. This large net benefit places avoidable blindness among the likes of investments in primary school education and infrastructure projects in terms of its broader economic stimulus effects.

The benefits to improving vision are not likely to be once off. The additional income earned from increasing the productiveness of the economy is likely to be multiplied. Increased savings resulting from the rise in labour productivity should provide a larger pool of resources from which to fund future private investment. While increased taxation revenue resulting from the lift in economic activity should also allow governments to fund additional essential services, such as health, education and sanitation to benefit their people. Over the longer term, it also offers low- and middle-income countries the prospect of increased self-reliance and sustainability.

**Conclusion: Treating avoidable blindness can contribute to the success of development policy**

There is strong evidence to indicate that health is prerequisite for development. Investments in improving the health of the poor can save millions of lives, reduce poverty, spur economic development, and even promote global security.

Yet correcting vision loss is sometimes seen as a “nice to have”, but not something that deserves the same priority as other diseases that are traditionally thought of as being linked to premature death or impeding development.

It can be argued, however, that reducing avoidable blindness is a potentially powerful tool to help foster and promote more inclusive growth. It is also one of the ‘most likely to succeed’ stories in development policy—the results are achievable and affordable, and improvements in vision can be directly attributed to increases in the well-being and longevity of affected individuals as well as positive economic development. It is an issue that warrants the specific attention and investment of those committed to development.

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4 This is known as “pro-poor” growth or, more formally, increasing the growth elasticity of poverty.
Achievable, Affordable and Attributable: The rationale for a focus on reducing avoidable blindness

Bibliography


Abou-Gareeb I, Lewallen S, Bassett K, Courtright P. (2001) op cit


Gooding K. op cit


Ibid.


Ibid.


Ibid


Reducing avoidable blindness: A challenge with two parts and its implications for resource allocation

Policy, Advocacy and Research Team, The Fred Hollows Foundation
Authors: Dr Lachlan McDonald, PhD; Dr Kate Taylor MBBS, MPH

In 2013, Member States of the World Health Assembly unanimously agreed to improve eye health and establish a global target for the reduction in prevalence of avoidable blindness by 25 per cent by 2019. While the agreement is a significant achievement, there is not an accompanying financing and resource allocation strategy to meet this goal. This is a critical gap, as without concrete plans to mobilise the required resources and allocate them to their best use, the strategy is unlikely to succeed.

We need to consider how resources can be allocated to meet this near-term target and beyond.

Understanding the burden of blindness in low-and middle-income countries (where avoidable blindness is most prevalent), is an important first step. Addressing blindness and vision loss in these countries requires action on two fronts: treating the flows of new cases of blindness when they arise (known as the incidence) and reducing the existing large stock of untreated cases of blindness (the backlog). While the incidence of blindness is driven by a variety of factors, including, increasingly, by non-communicable diseases, the majority is comprised of untreated cataracts and refractive error—discrete conditions with relatively straightforward treatments.

The way resources are allocated to eye care should suit the nature of the challenges targeted. This suggests a financing strategy with: (i) a focus on improving the capacity of eye health systems and integrating eye health into stronger health systems over the longer term; and (ii) a time-limited focus clearing backlogs for the nearer term. Such a calibrated approach offers the opportunity to make large reductions in avoidable blindness quickly and efficiently. In each context, care should also be exercised to ensure that measures used to clear backlogs do not hinder the longer-term vision of providing universal access to comprehensive eye care services.
Reducing avoidable blindness: A challenge with two parts and its implications for resource allocation

The state of play
Estimates from the Global Burden of Disease Study (GBD) 2010 suggest that 223.4 million people worldwide are unable to see: 32.4 million are blind, and a further 191 million have severe to moderate visual impairment.\(^1\) Poverty and blindness are tightly linked – poverty is a key determinant of vision loss, with the poorest people in the poorest countries most likely to be blind. Vision loss is also an important factor in tipping individuals and their families into poverty, or deeper into poverty if they are already poor (see Briefing Paper 1). The result is that the vast majority of people with visual impairment, around 90 per cent, is situated in low- and middle-income countries.\(^2\) Data from the same study indicate that women are more likely to be affected by blindness than men, accounting for around 60 per cent of blindness worldwide.\(^3\)

Importantly, around 80 per cent of blindness and vision impairment is avoidable. That is, it can be treated or prevented outright. The two main causes of visual impairment are cataracts and uncorrected refractive error.\(^4\) Globally, these two conditions represent 54 per cent of all blindness, and 71 per cent of combined blindness and visual impairment (Figure 1). In Southeast and East Asia and Oceania (i.e. the regions in the GBD study that align with WHO’s Western Pacific region) 8.7 million people were estimated as blind and 53.1 million estimated as visually impaired. In line with the global trends, cataracts and refractive error are particularly prominent in Western Pacific region, representing 47 per cent of all blindness and 62 per cent of visual impairment.

The current composition of blindness and visual impairment means that most vision loss can be treated with quick and relatively straightforward interventions.\(^5\) A person with a cataract can be treated surgically in approximately 20 minutes and can often see clearly the next day; while an eye test and a pair of spectacles can immediately restore the vision of a person with refractive error. There is also evidence showing that each intervention is highly cost effective, irrespective of whether effectiveness is measured in terms of the economic impact or improved quality of life (see Briefing Paper 1).

The causes of blindness, however, are changing. This reflects the demographic transitions underway in low- and middle-income countries as well as the broad shift toward more urbanised lifestyles. The implication for eye health is that age-related macular degeneration and diabetic retinopathy will become increasingly important. Diabetes, in particular, is expected to loom large. Globally, the number of people with diabetes is expected to grow rapidly over coming decades, rising by 55 per cent from 382 million in 2013 to 592 million by 2035.\(^6\) Approximately one third of people with diabetes have signs of eye damage, or retinopathy (though, if untreated, all people with diabetes are likely to develop

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1. Blindness is classified as scoring less than 3/60 in a visual acuity test where 3 is the distance in metres away from a vision testing chart that the person is reading; and 60 refers to the size of each character in the line being viewed. A visual acuity of worse than 6/18, but better than or equal to 6/60 is considered moderate visual impairment.
2. Cost-effectiveness is one of the considerations used to guide health policy makers in allocating a country’s scarce health resources.
Reducing avoidable blindness: A challenge with two parts and its implications for resource allocation

some degree of vision loss).\(^3\)\(^,\)\(^6\) These trends are mirrored in the Western Pacific – the region that already accounts for more than one third of all current known cases of diabetes. Looking forward, the number of people with diabetes in the region is also expected to increase sharply, rising by 46 per cent from 138 million to 201 million by 2035. The implication is that diabetic retinopathy is set to represent an increasing share of the incidence of visual impairment and rise substantially as a share of total vision loss.\(^4\)

Charting a path toward the achievement of global targets

Over the past two decades, improved access to health services and rising standards of living have contributed to the prevalence of blindness having fallen in all regions of the world. Globally, the age-standardised prevalence of blindness in older populations (>50 years) has fallen from three per cent in 1990 to 1.9 per cent in 2010.\(^5\)\(^,\)\(^7\) Similar falls have been recorded in the Western Pacific region (Figure 2). The total numbers of blind people, however, have not changed over that timeframe, as growing and ageing populations have broadly offset the gains resulting from reduced prevalence rates. It is estimated that in the absence of these prevalence reductions the number of people with blindness would be around 18.5 million larger than it is today.

Recognising the large and ongoing challenges of avoidable blindness, in 2013 the Member States of the World Health Assembly unanimously endorsed a global strategy for the prevention of blindness – known as the Global Action Plan. They included a target to reduce the level of avoidable blindness by 25 per cent by 2019 (from a 2010 WHO-established baseline).\(^8\)\(^,\)\(^9\)

The strategy includes a number of proposed actions for Member States. These include evidence gathering (including information on prevalence and causes of blindness, numbers of personnel and cataract surgical rates), development of national eye health plans and effective collaboration. There is not, however, an accompanying financing strategy to meet this goal. This is a critical gap as without concrete plans to mobilise and allocate the required resources, the strategy is unlikely to succeed.

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3 While there is considerable variation around the one third prevalence estimate, the International Diabetes Foundation indicate that the prevalence of diabetic retinopathy in people with diabetes is generally higher in low- and middle-income countries than elsewhere.

4 Current estimates from the GBD study indicate that diabetic retinopathy is relatively small as a share of total blindness and visual impairment (equivalent to around 4.5 million people). However, back-of-the-envelope calculations suggest that diabetic retinopathy may be underestimated in the blindness statistics given that one third of the 382 million people currently estimated to have diabetes equates to 126 million people. While such statistical anomalies are cause for concern, the implication of this analysis remains the same: the prominence of diabetic retinopathy in overall visual impairment is likely to increase over time. The estimates of the growth in diabetes to 2035 are sourced from the International Diabetes Federation and imply an annual average growth of around 2 per cent from current levels – well outpacing the expected 0.9 per cent annual growth in global population forecast over that timeframe.

5 Age-standardisation effectively removes the influence of age structure on the rate calculated.

6 In 2010 WHO estimated that, globally, 285 million people were visually impaired, of whom 39 million were blind. A 25 per cent reduction would amount to a 71.3 million fall in the total number of people with vision impairment – or a 9.8 million fall in the number of people with blindness.
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The strategy for achieving the targets in the Global Action Plan in low- and middle-income countries should be tailored to suit the challenge on hand. In particular, this includes the fact that new cases of visual impairment add to the existing backlog of untreated cases.

In simple terms, one way to think about this is to consider the case of a bathtub already full of water with an open tap that keeps adding water. In this analogy, each country is a separate bath and the water flowing into the bath from the open tap represents the incidence of blindness – or the flow of new cases. At the other end, the plug hole represents the capacity of the health system to treat cases of vision loss, with the size of the plug determining the outflow of water.

The water already in the bath represents the existing backlog of untreated avoidable blindness (the levels reported in Figure 1 above). This is the result of an historical mismatch between the flows of water into and out of the bath, which has led to the water level in the bath steadily rising over time.7

Meeting the challenge: hitting targets while being careful not to overshoot

The goal of the Global Action Plan essentially amounts to an effort to reduce the total amount of water in the avoidable visual impairment bathtub by 2019. Three broad strategies are shown in Figure 3 and include:

- improving preventative measures (reducing the flow into the bath);
- strengthening the capacity of the health system to treat cases (for example, widening the plug hole to increase the outflows); and
- specifically targeting the backlog (for example, finding additional resources to bail the existing water).

Each of these three approaches is important and requires an appropriate resource allocation and financing strategy. This paper focuses on the two latter options, which are more directly related to the supply and use of services.

For eye care services to be sustainable and universally available, eye health needs to be integrated into “normal” health budgets and processes. Such an approach is consistent with the focus on integrating comprehensive eye care services into broader health systems to improve the health of populations, as per the Global Action Plan.8 In the longer term this is also likely to be the only method consistent with the objectives of universal coverage – that is ensuring that services are available to all that need them with individuals protected from financial hardship.

In the immediate term, however, focusing solely on strengthening health systems is unlikely to achieve the near-term targets of the Global Action Plan. Systemic reforms take time as they need to be broad-based,

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7 Of course, this analogy is not strictly true since, unlike a bathtub, which starts empty, it is likely that there has always been a backlog of untreated avoidable blindness given its links with ageing. However, the point that the plug hole is insufficiently wide to clear the backlog as the tap keeps running is a reasonably accurate portrayal of the insufficiency of current health systems.
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methodical and focused on much more than financing service delivery. On the flipside, focusing on ways to clear current backlogs may provide an opportunity to make large reductions in the level of visual impairment relatively quickly. Cataracts and refractive error (which currently make up the bulk of backlogs) are well suited to stand-alone and targeted programs and the interventions required are generally one-off and highly cost effective, yet typically constrained by a lack of resources.

Any focus on targeting backlogs, however, should not introduce long-term, negative distortions to the health system. The following example of cataracts in Cambodia demonstrates the challenges of balancing the need for short-term reductions in visual impairment while considering the longer-term implications.

In 2013, the backlog of untreated cases of cataract blindness in Cambodia was estimated to be around 80,000 people with an annual incidence of around 19,500. Under a “business as usual” scenario—in which a modest growth rate in the 50+ population is assumed and the current cataract surgical rate (number of cataract surgeries per million population per year) is held constant (at 1,712) — by the end of 2019, it is estimated that the level of cataract cases will climb to 134,300 (68 per cent higher than in 2013). It is clear, therefore, that relying on business-as-usual activity within the current health system would not allow Cambodia to achieve a 25 per cent reduction in prevalence.

| Table 1: Cataract Surgeries in Cambodia and the Global Action Plan Target |
|---------------------------------
| Scenario analysis of measures required between 2014 and 2019 |

<table>
<thead>
<tr>
<th></th>
<th>Business as usual</th>
<th>To hit 25 per cent target</th>
<th>Change required (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current backlog (2013)</td>
<td>80,000</td>
<td>80,000</td>
<td></td>
</tr>
<tr>
<td>Estimated backlog in 2019</td>
<td>134,300</td>
<td>60,000</td>
<td></td>
</tr>
<tr>
<td>Total blind treated (2014-19)</td>
<td>83,773</td>
<td>161,975</td>
<td>93</td>
</tr>
<tr>
<td>Average blind treated (p.a.)</td>
<td>13,962</td>
<td>26,996</td>
<td>93</td>
</tr>
<tr>
<td>Average surgeries (p.a.)</td>
<td>26,179</td>
<td>50,617</td>
<td>93</td>
</tr>
<tr>
<td>Cataract surgical rate (CSR)**</td>
<td>(current) 1,712</td>
<td>(required) 3,310</td>
<td>93</td>
</tr>
</tbody>
</table>

* Assumptions: population grows in line with World Bank population forecasts for 50+ population to 2020 (3.7 per cent p.a.); incidence of cataract is fixed at its 2013 share of the 50+ population (0.93 per cent); CSR is held constant throughout the period resulting in surgical capacity increasing in line with population growth; 80 per cent of all cataract surgeries performed are on blind individuals; and for every two individuals treated, three surgeries were performed (as some individuals have only one cataract). Backlog estimates as at the end of 2019.
**CSR is calculated as the number of cataract surgeries per million population per year.
Sources: The Fred Hollows Foundation; World Bank.

This example, which is typical of many low- and middle-income countries where large backlogs persist, shows the extent of the challenge of reducing the levels of avoidable blindness in such a short timeframe. To achieve a 25 per cent reduction in the prevalence of cataracts, consistent with the ambitions of the Global Action Plan, the total number of outstanding cataract cases in Cambodia would need to fall by 20,000 by 2019. This translates to around 161,000 blind people needing to be treated, in total, between 2014 and 2019 – or a 93 per cent increase required in the cataract surgical rate.

This example also shows the potential pitfalls of focusing solely on the backlog in the immediate term. In particular, being overly backlog-conscious could potentially create distortions in health systems and have consequences beyond 2019 – particularly if the investments are not transferrable. For instance, in Cambodia the required increase in the cataract surgical rate could be achieved through an equivalent

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8 There are six main foundations of a health system: human resources, finance, health information, governance, service delivery and consumables and technology (World Health Organization 2007).
9 Though scenarios are conceivable where a focus on clearing the backlog could have positive spill-over effects, including catalytic change in quality, improved record keeping, training, etc.
10 This example is used to illustrate the extent of the challenge facing low- and middle-income countries in their attempt to meet the Global Action Plan targets. Individual countries have autonomy over what specific prevalence reduction target they aim for, though a 25 per cent reduction globally would require, on average, a commensurate 25 per cent reduction across all countries. The example also uses cataracts largely because data are available. In reality, any fall in the level of avoidable blindness is not likely to come solely from cataracts, but also other causes.
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increase in the number of surgeons (from 56 presently to 108).\textsuperscript{11} However, lifting cataract surgical rates in a relatively short time solely through new inputs (say via the importation of international surgeons) may ultimately be distortionary if it comes at the expense of investments in the longer-term capacity of the eye health system to treat the ongoing incidence of cases – particularly in light of the changing eye health needs of the population. A more effective approach might be to focus on finding ways to lift the surgical rate by blending any increase in inputs with other, targeted, approaches. This could include a focus on overcoming key bottlenecks and constraints that prevent people from accessing cataract surgeries, engaging underutilised resources, and improving efficiencies (these are discussed in Briefing Paper 4).

Conclusion: A resource allocation approach with two parts (for now)
Decisions about the way resources are invested and how eye health is financed in the period to 2019 will have important consequences. They will determine the success, or otherwise, of meeting globally agreed targets as well as determine whether eye health systems are well placed to deal with the longer-term challenges.

Ideally, a balance should be struck between two overarching aims, with the exact nature of the financing arrangement to be determined based on each specific country context. A two-track approach to allocating resources to eye health is therefore proposed.

First, continuing to focus on incrementally improving the capacity of eye health systems and integrating eye health into stronger health systems. This is critical to ensure that, ultimately, eye health services are universally available to those that need them. Strengthening key features of the eye health system; including governance arrangements, information management, service delivery models and financing; will ensure that health systems are well equipped to respond to the emerging challenges of blindness. These new challenges, in turn, will require a complex mix of prevention, treatment and management of chronic disease, rather than straightforward interventions.

Second, specific strategies should be developed and implemented that focus on clearing the backlog of untreated cases of vision loss – in particular cases of cataract and refractive error. Both sources of blindness are well suited to stand-alone and targeted programs, which presents an opportunity to make meaningful reductions in avoidable blindness in a relative short timeframe. An effective approach could be to blend additions to supply with a focus on overcoming the specific barriers that prevent the supply and use of services. Considerations regarding equity, for example targeting specific segments of the backlog could be factored in.\textsuperscript{12}

The focus on clearing backlog should be finite. Reductions in the backlog should not need to be repeated once health systems are able to adequately treat all causes of blindness that arise – including one-off treatments such as cataracts and chronic disease management as will be required with diabetic retinopathy.

\textsuperscript{11} This assumes that the new surgeons would perform approximately the same number of surgeries, on average, each year (467) as current surgeons.

\textsuperscript{12} To the extent that addressing equity considerations may mean targeting cases that are persistently hard to reach (and expensive), there may be some trade-off in terms of how rapid reductions in the backlog can be.
Reducing avoidable blindness: A challenge with two parts and its implications for resource allocation

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e International Diabetes Federation (2013) op cit.
‘Better to light a candle than curse the darkness’: estimating spending on global eye health

Policy, Advocacy and Research Team, The Fred Hollows Foundation
Authors: Dr David Lansley, PhD; Dr Lachlan McDonald, PhD

Adequate and appropriate funding is critical to achieve the goal of ending avoidable blindness. It is agreed that more resources are required for eye health. It is not possible to be precise on how much is currently being spent, nor exactly how much more is needed. The best available estimates have been produced by PricewaterhouseCoopers’ Three Rivers Consulting. They call for US$43.3 billion annually to be spent in low- and middle-income countries between 2011 and 2020 to clear the backlog of blindness, maintain and increase eye health system capacity; US$12.8 billion of this is assumed to be expenditure in addition to recurrent (that is, existing) spending in these countries.

Data limitations mean that the exact scale of the resource need is not certain. More comprehensive and reliable data on eye health spending are needed. Standardised measures on spending (public and private) should complement the indicators on prevalence, human resources and surgical activity already being collected under the Global Action Plan. At the same time, it is important to attract and allocate sufficient resources for eye health, to reduce reliance on out-of-pocket expenditure, and to increase efficiencies within the eye health system.
Introduction
The target outlined in the Global Action Plan of reducing the global prevalence of avoidable visual impairment by 25 per cent by 2019 has broad international support. However, there are a number of major challenges. These include the effects of population growth and ageing, and the rise of non-communicable diseases and diabetes, which will have serious implications for the level and composition of vision loss (see Briefing Paper 1).

Measuring progress towards the Global Action Plan target, especially in low- and middle-income countries, consequently, is essential. In its report Towards Universal Eye Health: A Regional Action Plan for the Western Pacific (2014-2019), the World Health Organization (WHO) identified three key indicators of progress toward achieving the goals of the Action Plan: the prevalence and causes of visual impairment; the size and composition of the eye health workforce; and the scale of surgical activity.

Not included in the list of indicators, but arguably of equal importance, is comprehensive and reliable information on the amount and sources of eye health funding. This matters for at least four reasons.

• Without a good estimate of current expenditure, we do not know the size of the gap between actual spending and the spending needed to achieve some desired outcome.
• Estimating total expenditure is likely to involve collecting a variety of data, allowing a more detailed picture of eye health spending to be built up.
• A better understanding of the allocation of spending improves assessment of effectiveness and value for money and aids calculation of benefit/cost ratios.
• And from a policy perspective, a better understanding of the relative importance of the sources of eye health spending – public, private, health insurance and out-of-pocket – contributes to developing more equitable and efficient funding mixes.

This briefing paper looks at the best available estimates of the current expenditure on eye health and the future resource needs required to achieve global targets. It discusses the calculation of these estimates and compares them with known information from other sources, in particular spending by eye-related NGOs. It concludes that a substantial share of the current spending burden is likely being borne by out-of-pocket expenditure, though the outstanding data requirements are considerable and need immediate redress.

Estimating Current Eye Health Spending and the Financing Gap
At present, data on eye health spending, particularly by low- and middle-income countries, are scattered and incomplete. Accordingly, a common refrain from researchers in the area is the need for more and better quality spending data on eye health.

The only available estimate of global eye health spending comes from a comprehensive analysis undertaken by PricewaterhouseCoopers and Three Rivers Consulting (PwC/3R) in 2013. The authors measured both current eye health spending across the world and the additional investment required to eliminate avoidable blindness globally by 2020 (an earlier goal of the VISION 2020 consortium, which has since been superseded by the targets in the Global Action Plan).

PwC/3R disaggregated eye health spending into three areas of activity – the primary and secondary eye health systems and elimination of the backlog of avoidable blindness – and estimated each separately. Spending in each of the primary and secondary systems was divided into recurrent (‘business as usual’) spending and the additional investment in labour, infrastructure, technology development and other inputs.
(such as training) needed to increase the capacity of the existing eye health systems to meet the 2020 goal. Because of data limitations, a range of approaches was used to provide estimates and these estimates were then aggregated to give the total spending required. For more information the techniques used, see Appendix.

The estimates of global spending on eye health produced by PwC/3R are the most comprehensive available. They bring together for the first time the range of benefits – health, economic and social – from eliminating avoidable blindness globally. The methodologies were reviewed by clinical and academic experts to validate the approach used.

An important advantage of PwC/3R’s approach to separately estimate the recurrent annual spending over the period 2011-2020 is that it provides an approximation of current spending in the starting year (2011). To the extent that the methodology is designed to calculate the spending needed to maintain an ideal primary and secondary eye health systems it is likely to overestimate, to some extent, the actual level of spending. Nonetheless, the authors confirm that the recurrent spending estimate can be considered a broad approximation of the total level of spending in 2011.

The main eye health spending estimates by PwC/3R are set out in Table 1. The report found that the amount currently spent globally on eye health is substantial and the additional amount needed to be invested to eliminate avoidable blindness by 2020 consequently is relatively small (representing a 7 per cent lift in annual expenditure above estimates of recurrent spending). In low-and middle-income countries, however, the additional investment required is more considerable (in part because they are starting from a much lower base). For this group of countries the required increase is around 42 per cent on estimated current annual levels of spending.

<table>
<thead>
<tr>
<th>Table 1: Estimates of annual eye health spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>US $ billions (constant 2009 prices), per annum average over ten years (2011-2020)</td>
</tr>
<tr>
<td>Recurrent</td>
</tr>
<tr>
<td>LMIC</td>
</tr>
<tr>
<td>Primary health</td>
</tr>
<tr>
<td>Secondary health</td>
</tr>
<tr>
<td>Clear backlog</td>
</tr>
<tr>
<td>Grand Total</td>
</tr>
</tbody>
</table>

* HIC – high-income country
** LMIC – low- and middle-income country
Source: PwC / 3R

Key points from the table include

- High-income countries represented around 95 per cent of the estimated total US$ 591.7 bn annual (recurrent) spending on eye health. In low-and middle-income countries the recurrent expenditure is estimated to be US$ 30.5 bn.
- The total additional annual expenditure required over the ten years to 2020 to eliminate avoidable blindness (that is, expand the current system and eliminate the backlog) was estimated to be US$ 39.4bn, of which an additional US$ 12.8bn is needed to be spent annually in low-and middle-income countries.

These estimates, while the best available, should be seen as a starting point only. If compared to other estimates based on more reliable sources of information, the figures may not reflect experience on the ground.

A rerun of the model to incorporate the latest actual population data and the changes in future prevalence of avoidable blindness these produce was done after publication of the report, but the changes to the cost estimates were minor.
‘Better to light a candle than curse the darkness’: estimating spending on global eye health

For example, Figure 1 compares recurrent annual spending in low- and middle-income countries with spending in a range of related areas. Even though estimated spending on eye health in low- and middle-income countries is much less than high-income countries, the estimates form the report are still large. For example, the US$ 30.5bn estimated annual expenditure on eye health is more than 60 per cent greater than the US$ 18.9bn available for HIV/AIDS programs in low- and middle-income countries in 2012.\textsuperscript{k,l}

Figure 1: Global Spending Comparisons
US$ bn per annum*

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Global Spending Comparisons}
\end{figure}

\footnotesize
\textsuperscript{*} 2011 unless otherwise specified. Global Fund is average of disbursements on HIV/AIDS, malaria, TB, and health system strengthening 2010-2012.
Sources: WHO (2013)\textsuperscript{m}; Global Fund (2014)\textsuperscript{n}; UNAIDS (2013)\textsuperscript{o}; PwC/3R (2013); OECD (2014)\textsuperscript{p}

Closing the Financing Gap: Some Implications of the PwC/3R Report

Unfortunately, available data on spending from the major sources of health expenditure (overseas development assistance (ODA), government, and private (out-of-pocket spending) are not particularly helpful in validating these estimates. The overriding problem is that health spending data from these sources are rarely broken down sufficiently to identify spending on eye health. In large part this reflects the fact that eye health is rarely, if ever, separately specified in expenditure data; indeed it is often included amongst the broad category of non-communicable diseases (which also includes cardiovascular disease and cancers).

The most reliable and comprehensive data available are on spending by major eye health funding NGOs (Table 2). Consolidated spending by these NGOs (which is assumed to be all spent in low-and middle-income countries) amounted to around US$ 428.5 million in 2013. This represents a very small share (only 1.4 per cent) of the total US $30.5 billion expenditure on eye health estimated by PwC/3R.

It is known that other overseas development aid historically has contributed little to eye health. Notable exceptions include Australia’s $66 million investment in the Avoidable Blindness Initiative and the Queen’s Diamond Jubilee Trust, which is raising funds across the Commonwealth for trachoma.

\begin{table}[h]
\centering
\caption{Spending on Eye Health
Major Eye Health NGOs, 2013*}
\begin{tabular}{|l|c|}
\hline
Organisation & US$ m \\
\hline
Brien Holden Vision Institute & 8.4 \\
Christian Blind Mission (CBM) & 30.4 \\
Fred Hollows Foundation & 39.4 \\
Hellen Keller International & 169.9 \\
International Eye Foundation & 7.1 \\
Light for the World & 4.8 \\
Lions Club & 12.8 \\
Operation Eyesight Universal & 5.5 \\
ORBIS & 94.5 \\
Seva Foundation & 7.0 \\
Sight for All & 0.3 \\
Sightsavers & 48.5 \\
\hline
Total & 428.5 \\
\hline
\end{tabular}
\end{table}

\footnotesize
\textsuperscript{*} Or nearest year. Source: Annual Reports except Operation Eyesight Universal (2012 Financial Review) PwC/3R’s
Estimates for eye health expenditure funding from government budgets and out-of-pocket expenditure by patients at the point of service lack reliable data to inform them.

While there are no precise figures available, there is a **prima facie** case that the bulk of eye health spending comes from out-of-pocket expenditure. This squares with what we know about the predominance of the private sector in eye health systems in many low- and middle income countries and that service access is often linked to capacity to pay (see Briefing Paper 4). It is also consistent with high level information on total health expenditure, which indicates that there is a clear negative relationship between the income of country and the burden placed on out-of-pocket spending (Figure 2).

**Conclusion**
Eliminating preventable blindness requires funding for additional human and other resources. The exact scale of this task is not certain, but it requires both refining estimates of the size of the gap between actual and needed resources and mobilising additional finances to expand and enhance the quality of primary and secondary eye health systems.

Closing these gaps can be done simultaneously. More comprehensive and reliable data is needed not only to improve the accuracy of estimating the resources gap, but also to better understand the mix of resources currently going to eye health. At the same time, ways to increase eye health system capital and labour productivity, reduce reliance on out-of-pocket expenditure, and attract new finance to the eye health sector need to be actively explored.
Appendix: Estimating Eye Health Expenditure

For estimates of the recurrent spending in both the primary and secondary systems, PwC/3R took a high level approach. For low-and middle-income countries, an average of the proportion of eye health spending as a share of total health spending was estimated for three countries, Peru, Paraguay, and Nepal. The resultant ratios (0.59 per cent for primary health and 1.90 per cent for secondary health) were then applied to estimates of total health expenditure by other low-and middle-income countries (from World Development Indicators data). The reliability of the eye health spending estimates are also dependent on the assumptions underpinning them. For example, data availability dictated applying the eye health share of total health spending in Nepal, Paraguay and Peru to low-and middle-income countries more widely, but it is not clear how representative they are of low-and middle-income countries in general.

Expansion of the primary and secondary eye health systems was calculated using estimates of the increase in the eye health workforce needed to meet the 2020 goal. Workforce, in this context, is used as a proxy measure of the capacity of eye health systems (mirroring the way the data are used in the Global Action Plan). For the primary system this included GPs, optometrists and allied health professionals, and ophthalmologists for the secondary system. The required increase in human resources in each country was based on the ratios provided VISION 2020 on human resource-to-population needed for a sustainable system. The additional investments necessary were spread over the period 2011 to 2020.

To estimate the cost of eliminating the backlog of avoidable blindness, PwC/3R estimated the number of procedures needed and multiplied them by a representative cost for each type of procedure. Costs varied considerably between low- medium- and high-income countries. The procedures costed covered the major sources of preventable blindness: cataracts, glaucoma, diabetic retinopathy, trachoma, onchocerciasis (‘river blindness’), and undiagnosed refractive error.

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5 The percentage in Peru and Paraguay was estimated by dividing total eye health expenditure by total health expenditure. The percentage in Nepal was calculated by estimating total health expenditure from World Development Indicators, averaging the cost of cataract surgeries in different Nepalese regions in addition to totalling the cost of general eye health services. The cataract surgical rate was used to determine the level of service usage for cataract surgeries.

6 For example, the assumptions for the cost of a cataract procedure ranged from US$19 in a low-income country to US$ 962 in a middle-income country, and US$ 2,743 in a high-income country. For glaucoma, the respective costs were US$ 1, US$ 1,285, and US$ 2,569. And for trachoma, the range was even wider: US$1, US$ 2,570, and US$ 5,138 (see PricewaterhouseCoopers and Three Rivers Consulting. 2013, pp. 37-38).

7 And even within countries. For example, one study found the cost of cataract surgery in Zambia ranged from $US 20 to $US 500 depending on the type of facility used (see Bazzani, et al. 2014, p7).
Better to light a candle than curse the darkness': estimating spending on global eye health

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Practical pathways to universal eye health – improving the availability, accessibility, affordability and acceptability of eye care services

Policy, Advocacy & Research Team, The Fred Hollows Foundation
Authors: Dr Lachlan McDonald, PhD; Dr Kate Taylor MBBS MPH

It is well established that most blindness and visual impairment is avoidable. While vision loss tends to increase with age, an important reason for the concentration of cases among the poorest people in the poorest countries is the numerous barriers that prevent individuals accessing and receiving the health services they require.

This paper summarises findings from research on barriers to accessing eye health services and draws specifically on patient-centric information. While specific barriers for each individual are likely to vary, in general they reflect a combination of constraints on the supply side as well as demand side factors. Women are particularly marginalised as they face a host of additional barriers related to gender that specifically inhibit their access.

Attaining the goal of universal eye health requires that these barriers are overcome and that individuals (in particular the poor and marginalised) are able to use eye care services when needed. Costs that exceed individual’s capacity to pay are consistently a barrier. At present, few countries in the Western Pacific region have well-established national health insurance systems and those that do tend to only provide coverage to a limited share of the population because of resource constraints. Efforts to broaden the base of these insurance systems are largely the role of governments and will take time.

In the interim, smaller actors can play an important complementary role in broadening the coverage of affordable eye care services by focusing on improving the productivity of existing systems and overcoming some of the specific barriers that prevent individuals from accessing services. Devising practical and innovative financing and delivery models, and testing their success, can both strengthen the functioning of existing eye health systems as well as contribute to the evidence base. Such actions can also serve as stepping stones to broader reforms.
Practical pathways to universal eye health – improving the availability, accessibility, affordability and acceptability of eye care services

Introduction
The likelihood of vision loss increases with age. With effective prevention and treatment services, however, most causes of vision loss can be prevented or treated. Despite this, there are observable geographic and socioeconomic patterns in the distribution of visual impairment. The vast majority of blindness and visual impairment is concentrated in the poorest people in the poorest countries (see Briefing Paper 2). This distribution is not by chance. Given the considerable innovation in recent decades that has led to advanced diagnostics and treatment, this distribution is not the result of technical factors. Rather, the reason is that some individuals are unable to access the treatment they need because of a range of social, economic and logistic barriers.

Broadly speaking, the goal of universal health centres on “ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while also ensuring that people do not suffer financial hardship when paying for these services”. Universal eye health, which is the stated goal of the Global Action Plan, narrows the focus to universal access to comprehensive eye care services. This paper focuses on the specific and identifiable barriers that prevent universal eye health and practical ways that smaller actors can overcome them in the short term. It introduces key features of eye care systems in the context of a well-established framework for determining the accessibility of health services. Concrete financing and delivery approaches are then identified that have been successful in overcoming similar access barriers in a range of health contexts. It then combines information on the barriers and potential interventions to specify a framework for improving the functioning of existing eye health systems.

Access and eye health
Access to health care is commonly described as “the timely use of services according to need”. Focusing on meeting people’s needs is useful for describing universal coverage because it incorporates the interplay of both the supply and demand sides of health – that is, whether services are being provided and whether available services are being used by patients. The Global Action Plan explicitly aims to capture information on the accessibility of services through two metrics: the cataract surgical rate (CSR), a measure of surgical output at a point in time, as well as the Cataract Surgical Coverage rate (CSC), which evaluates the degree to which cataract surgical services are meeting the needs of the eligible population.

The factors that prevent individuals from being able to access health services are commonly divided into four dimensions: availability; geographical accessibility; affordability; and acceptability. These dimensions include both monetary and non-monetary aspects; factors inherent to the health system – such as inputs, payments, and behaviour; and factors inherent to the patient – including household resources, willingness to pay, location and attitudes (Table 1).

<table>
<thead>
<tr>
<th>Access Dimension</th>
<th>Supply side</th>
<th>Demand side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Input Factors</td>
<td>Demand for services</td>
</tr>
<tr>
<td>Geographical Accessibility</td>
<td>Service location</td>
<td>Household location</td>
</tr>
<tr>
<td>Affordability</td>
<td>Cost recovery</td>
<td>Household resources</td>
</tr>
<tr>
<td>Acceptability</td>
<td>Characteristics of the health services</td>
<td>Willingness to pay / seek care</td>
</tr>
</tbody>
</table>

Adapted from: Eichler (2006); Peters et al. (2008); Ensor and Cooper (2004); Jacobs, et al. (2011).

This framework is reflected in the Global Action Plan, which encourages member states to assess the “availability, accessibility, affordability, sustainability, quality and equity of services provided, including cost–effectiveness analysis of eye health programmes”.

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Practical pathways to universal eye health – improving the availability, accessibility, affordability and acceptability of eye care services

Studies suggest that while each individual’s situation is unique, each of the four access dimensions plays an important (and at times mutually-reinforcing) role in inhibiting people’s access to eye care services. The common features across eye health systems that affect access include: an overall shortage of essential inputs; the mal-distribution of existing resources; the costs associated with accessing services; as well as patient’s attitudes and perceptions, including the role of gender.

i) Shortage and mal-distribution of essential inputs

Human resource-to-population ratios show that in many low- and middle-income countries there is a critical shortage of trained human resources to meet the overall eye health needs of the general population. This includes doctors with specialist training to perform cataract surgeries, such as ophthalmologists, which directly restricts overall surgical capacity. It also includes shortages of lower-level cadres such as ophthalmic nurses and optometrists, which combine to undermine the productivity of the existing human resource base.1

In most countries eye health operates as a mixed system, with private providers operating alongside government service providers. The relative scarcity of professional staff tends to result in the available resources being concentrated in urban areas and in private practice. It also results in the costs of financing eye care being largely met via out-of-pocket spending by patients – an inherently inequitable situation that links access to capacity to pay.2

ii) Patient costs

The chronic shortage and mal-distribution of human resources place physical and economic barriers between individuals and services. This is particularly the case in geographically remote, less-urbanised areas, which are often left with poor or non-existent eye health services.

In order to access eye care, individuals from rural communities must commute to where services are provided. This in turn drives up the out-of-pocket costs (e.g. from transport, meals and accommodation while travelling) and the opportunity costs (lost earnings, time away from farming, etc.). These indirect costs of care present a considerable affordability barrier for rural households – particularly where there is a lack of good-quality roads and public transport options.3 However, they also compound the direct fees patients must pay for services4, 5

Studies have tended to find that patients are willing to pay for services, in particular cataract surgery.5 However, in a number of contexts, particularly in poorer areas, the amount is insufficient to fully cover the provider’s costs. Some innovative social enterprise models have found ways to implement differential pricing and provide some services below cost while remaining solvent (see below). However, the practice is not particularly widespread.

iii) Knowledge gaps and perceptions of quality

There is a growing body of research that underscores the importance of information in determining individual’s choices regarding their eye health. Individuals’ lack of knowledge about the availability of services is often cited as a reason why cataract surgical services are not utilised.

1 Redistributing tasks within the eye health system (known as “task-shifting” and “task-sharing”) has been successful in some contexts in alleviating, but not completely overcoming, human resource constraints. For instance, in Africa training ophthalmic clinical officers (OCOs) to perform cataract surgery has been successful in widening the resources available for surgery. While training health workers in communities to screen for eye disease has been successful in bringing services to where people live. However, such a practice of task shifting is not widespread, and is limited by local health policy and regulations.
2 The link between service access and capacity to pay is also consistent with official national health accounts data that indicate a generally high proportion of out-of-pocket expenditure in total health expenditure in most low- and middle-income countries.
In addition, patient perceptions are critical in determining their utilisation of services. Attitudinal factors that inhibit demand include the broader acceptance that losing sight is a normal part of ageing and that investment in the elderly is not a priority. Some people believe that particular levels of sight loss do not justify the cost or effort to get treatment. Fears of treatment, surgery and travel also dissuade individuals from utilising services. Stories about the unsatisfactory past performances of the health system, including poor surgical outcomes, long delays and repeated rescheduling can undermine people’s trust in the system. In rural areas, perceptions about the poor value of the eye health system, combined with the lack of local eye health workers and the costs of accessing eye health services can increase the relative attractiveness of locally available traditional healers.

iv) The additional barriers of gender
Women generally face an array of additional difficulties in accessing and utilising eye health services. Women tend to be poorer and have less access to education and employment than men. Women also tend to have less access to and control of family finances; a relatively low status within the community and family (resulting in a lower priority being given to seeking health care); and less ability to travel due to cultural factors or family responsibilities. Women are restricted from uptake of surgery unless barriers of distance or cost are minimal or unless they hold an important position in the family.

The gender-based roles in many societies also increase women’s risk for some eye disease. Women’s caring for children means they are more likely to be repeatedly infected by and go blind from trachoma.

From research to reality
Rapid Assessments of Avoidable Blindness (RAAB) provide a particularly useful (albeit under-utilised) cross-check on the barriers to better eye health. RAAB studies specifically ask individuals for the reasons why they were unable to access cataract surgery. This provides a context-specific and patient-centric perspective on the reasons why eye care services are not utilised – even when they are available. While the data are presented as aggregates (for example "cost" is not broken down into the individual cost components) they nonetheless provide some insight into the existence and relative importance of individual barriers in particular locations. They also provide a useful sense of the importance of gender in each barrier, by breaking down responses by women and men.

<table>
<thead>
<tr>
<th>Table 2: Main barriers to cataract surgery in individual contexts</th>
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<tbody>
<tr>
<td>Study*</td>
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<td>--------</td>
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<tr>
<td>Lao PDR (2008-09)</td>
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<td>Cambodia (2007)</td>
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<tr>
<td>Jiangxi Province, China (2007)</td>
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<td>Tarlac Province, Philippines (2014)</td>
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</tbody>
</table>

* Lao PDR (2008-09) includes northern provinces of Phongsaly, Luangnamtha, Oudomxay and Bokeo; Cambodia (2007) is country wide; Vietnam (2008) includes 16 provinces, while the studies in China and Philippines are specific to individual provinces. Results presented for Jiangxi Province are for Xin’gan County.
Table 2 shows the most prominently cited constraints to accessing cataract surgery from recent RAAB studies in the Western Pacific region. While these studies come from a range of different places there appears to be some broad consistency across the main barriers cited by respondents, which squares with broader research on barriers. These include patient’s costs (including the physical remoteness from services), patients’ lack of knowledge and social attitudes. Interestingly, all respondents that selected “Old age - no need” in Lao PDR were women. This suggests that perceptions are a gendered barrier in Laos, specifically affecting women.

While the main barriers are similar, they are not overwhelmingly dominant. In each location the most prominent barrier was selected by between one quarter and one half of respondents. This is likely to reflect a number of factors, including subjectivity in how patients articulate their barriers to the survey and the local context. Nonetheless, these data, coupled with local knowledge about the circumstances about how they come about, should provide an important guide as to what the immediate priority areas for reducing barriers are likely to be.

An interim focus on practical solutions to overcome key barriers to access

The barriers to access described above, and the large number of untreated cases of avoidable blindness in general, clearly demonstrate that eye care services are not universally accessible in any low- and middle-income country. This is also confirmed in the generally low rates of Cataract Surgical Coverage reported in individual RAAB studies.  

The goal of universal eye health is to overcome these barriers and broaden service coverage. Integrating eye care into a broad package of services covered by a pool of pre-paid health expenditures can break the nexus between service access and capacity to pay— thereby improving equity by ensuring that the burden of financing of eye health systems is shared and not entirely borne by those in need of treatment.

While integrating eye care services into a prepaid pooled financing vehicle (such as a national health insurance scheme or other private alternatives) is necessary for universal coverage in low- and middle-income countries, it is insufficient. Equally critical is whether eligible patients across all locations and socioeconomic cohorts are actually able to access the services they need. This will largely depend on the capacity of governments (or third-party donors) to finance these systems. At present, the combination of large informal labour markets and weak institutions constrains governments’ ability to raise revenue; which limits the overall pool of resources available to pay for health services. The result is that even in countries where eye care services are presently included in a national insurance system, services are inevitably rationed.

This manifests itself either as coverage being limited to a narrow cohort (such as government employees or formal sector workers) or being limited to certain geographic regions – such as capital cities.

The challenges governments face raising revenue imply that extending the financial coverage of eye health services beyond their current levels will often take time. In the interim, smaller actors across the spectrum (including civil society, the private sector, development agencies, think tanks and others) can play an important complementary role in widening the accessibility of services. Rather than aiming for broader systemic reform, smaller players can focus on finding practical and cost-effective ways to improve the functioning of existing eye health systems in each individual context. This includes ways to overcome

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3 While RAABs are designed to sample 2500-3000 people over 50 years of age, and the results must not be extrapolated beyond the sample, in general, CSC reported in studies across East Asia tend to be around one half to two thirds. Importantly, the coverage rate for women is always lower than men (and sometimes by a considerable margin). This indicates, once more, the specific barriers faced by women.

4 Examples in the Western Pacific region where services are being rationed in this way include Lao PDR, Philippines and Marshall Islands – see report on the 2014 Regional Action Plan meeting (forthcoming).

5 Rationing can also manifest itself as a shortage of medicines or delays in purchasing, upgrading servicing necessary equipment because the required funds aren’t available.
barriers that prevent individuals from utilising the existing services available, as well as various ways to encourage an increase in the overall level of services provided (see Box below).

In addition, there should be a complementary focus on finding ways to ensure the financial sustainability of the system by way of improved cost recovery models.

An assortment of financing and delivery mechanisms to improve access to eye health

Examples abound of innovative and well-targeted financing and delivery models that have been successful in increasing the demand for and supply of health services in low- and middle-income countries while maintaining financial protections for the poor and marginalised (see Table A in Appendix for a description of various models). They provide fertile ground for exploring options for improving the delivery of eye health within existing systems and health systems and overcoming the barriers to the better provision and utilisation of eye care services.

There are numerous examples of ways to harness the potential of the private sector. While ultimate responsibility for the stewardship of eye health systems should reside with national governments, the already prominent private markets for eye health – including licensed for-profit providers, social enterprises that aim for social impact and financial sustainability, and community-level workers – means that private providers should be seen as key vehicles for system improvements.

The Rockefeller Foundation has done considerable research into financing models to make health markets operate more efficiently and equitably. They suggest that there are five broad types of financing models: patient subsidies, patient education, reducing fragmentation amongst providers, changing provider incentives, and the use of technologies to improve access and quality (see Table B in Appendix).

Table 3 provides an assortment of financing and delivery systems that have the potential to improve service access and financial protection for the poor and marginalised by improving the functioning of the eye care system. This framework builds on the four dimensional framework for explaining access explained above by combining specific information on the barriers that prevent people from accessing eye care services with experiences of successful financing and delivery models. Interventions that widen access to services while ensuring that people are still protected financially can be important stepping stones to broader reform, such as integrating a stronger eye health system into broader health systems. It can also provide an important evidence base for future replication.
Conclusion

Universal eye health requires that all individuals are able to access eye health services – including prevention, treatment, and disability support – when needed. Despite eye care being notionally included in publicly provided health insurance systems in some countries it is clear that services are not presently universal.

A careful assessment by smaller actors of the barriers that prevent people from accessing services can play an important role in widening overall service accessibility in the near term. To that end, the focus is on finding practical, innovative and cost-effective ways to bridge the outstanding coverage gaps that exist in each context.

In general, the broad mix of demand and supply barriers in eye health and the potential interplay between them mean that there is unlikely to be a single dominant model for strengthening eye health systems in any given context. Rather, a number of barriers may need to be addressed concurrently through multiple mechanisms.

There are many examples of mechanisms that have been successful in overcoming specific barriers to accessing health care. Where suitable, these example can be drawn upon to suit the main barriers to eye care in given contexts. Devising and testing financing approaches in the field, and then evaluating their success at overcoming specific barriers will be an important way to both strengthen the functionality of eye health systems in the near term and develop an important evidence base that can be drawn on when looking to replicate models or take them to a larger scale. It may also pave an easier path to longer-term universal eye health to the extent that stronger, better functioning eye care systems will be able to be incorporated into ever-widening national insurance systems.
Table 3: Barriers to better vision – An assortment of options

<table>
<thead>
<tr>
<th>Supply side barriers</th>
<th>Potential solutions</th>
<th>Demand side</th>
<th>Potential solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Factors</strong></td>
<td></td>
<td><strong>Demand for services</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>• Supply and distribution of trained staff and their motivation level.</td>
<td>• Integrated outreach services.</td>
<td>• Price and availability of substitute products and services (substitute drugs from local drug sellers or care from local traditional healers).</td>
</tr>
<tr>
<td></td>
<td>• Quality and availability of drugs and equipment.</td>
<td>• Emergency transport.</td>
<td>• Knowledge of health care choices.</td>
</tr>
<tr>
<td></td>
<td>• Opening hours, waiting times and available staff.</td>
<td>• Identification of underutilised capacity (labour and capital)</td>
<td>• Counselling and consumer information on services and products.</td>
</tr>
<tr>
<td></td>
<td>• Availability of primary care (e.g. screening) leading to secondary care.</td>
<td>• Contracting and pay-for-performance mechanisms.</td>
<td>• Accreditation to indicate better providers.</td>
</tr>
<tr>
<td></td>
<td>• Adequacy of referral pathways.</td>
<td>• Cross-subsidy enterprise models.</td>
<td></td>
</tr>
<tr>
<td><strong>Geographical Accessibility</strong></td>
<td></td>
<td><strong>Household location</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Service location</strong></td>
<td>• Adequacy of road infrastructure, transport and communication services.</td>
<td>• Reduce fragmentation of providers though franchising and integrated business models</td>
<td>• Indirect costs to households:</td>
</tr>
<tr>
<td></td>
<td>• Supply chains for equipment, drugs, etc.</td>
<td>• Bulk procurement</td>
<td>• Availability and price of transportation.</td>
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<tr>
<td></td>
<td></td>
<td>• Distribution hubs</td>
<td>• Price of meals/accommodation.</td>
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<tr>
<td></td>
<td></td>
<td>• Technology (telemedicine)</td>
<td>• Opportunity costs of time:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cross-subsidy enterprise models</td>
<td>• Foregone income.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Locate health workers and facilities closer to patients</td>
<td>• Non-monetary sacrifices.</td>
</tr>
<tr>
<td><strong>Household location</strong></td>
<td></td>
<td></td>
<td>• Vouchers.</td>
</tr>
<tr>
<td></td>
<td>• Indirect costs to households:</td>
<td></td>
<td>• Conditional cash (or non-cash) transfers.</td>
</tr>
<tr>
<td></td>
<td>• Availability and price of transportation.</td>
<td>• Opportunity costs of time:</td>
<td>• Community-based (micro) health insurance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Price of meals/accommodation.</td>
<td>• Foregone income.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Opportunity costs of time:</td>
<td>• Non-monetary sacrifices.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Foregone income.</td>
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</tbody>
</table>
### Table 3 (continued): Barriers to better vision – An assortment of options

<table>
<thead>
<tr>
<th>Supply side barriers</th>
<th>Potential solutions</th>
<th>Demand side</th>
<th>Potential solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affordability</strong></td>
<td></td>
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<tr>
<td></td>
<td>Cost recovery</td>
<td>Household resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Targeted incentive payments to treat specific patient groups.</td>
<td></td>
<td>Direct costs of treatment (including fees paid for care, medicines and supplies).</td>
</tr>
<tr>
<td></td>
<td>Targeting of user fee exemptions.</td>
<td></td>
<td>Disposable income.</td>
</tr>
<tr>
<td></td>
<td>Supply chain management and improved procurement processes.</td>
<td></td>
<td>Service quality (costs resulting from delayed and wrong diagnosis, incorrect treatment).</td>
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<tr>
<td></td>
<td>Specialisation / standardisation.</td>
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<tr>
<td></td>
<td>Price of service, including informal fees.</td>
<td></td>
<td>Conditional cash (or non-cash) transfers.</td>
</tr>
<tr>
<td></td>
<td>Price of input factors.</td>
<td></td>
<td>Vouchers.</td>
</tr>
<tr>
<td></td>
<td>Private public dual practices.</td>
<td></td>
<td>Community funding pools to pay for transport</td>
</tr>
<tr>
<td></td>
<td>Direct costs of treatment (including fees paid for care, medicines and supplies).</td>
<td></td>
<td>Community-based (micro) health insurance.</td>
</tr>
<tr>
<td></td>
<td>Disposable income.</td>
<td></td>
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<tr>
<td></td>
<td>Service quality (costs resulting from delayed and wrong diagnosis, incorrect treatment).</td>
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<tr>
<td><strong>Acceptability</strong></td>
<td></td>
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<tr>
<td></td>
<td>Characteristics of the health services</td>
<td>Willingness to pay / seek care</td>
<td></td>
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<tr>
<td></td>
<td>Health system infrastructure.</td>
<td></td>
<td>Users’ attitudes and expectations (trust / fear).</td>
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<tr>
<td></td>
<td>Management / staff efficiency and quality.</td>
<td></td>
<td>Perceived quality / confidence in services and facilities.</td>
</tr>
<tr>
<td></td>
<td>Complexity of billing system and ability for patients to know prices beforehand.</td>
<td></td>
<td>Cultural preferences, attitudes and norms.</td>
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<td></td>
<td>Knowledge and availability of technology.</td>
<td></td>
<td>Intra-household spending preferences.</td>
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<tr>
<td></td>
<td>Quality assurance.</td>
<td></td>
<td>Under-prioritisation of elderly and women.</td>
</tr>
<tr>
<td></td>
<td>Accreditation / licencing.</td>
<td></td>
<td>Counselling and consumer information on services.</td>
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<tr>
<td></td>
<td>Regulation.</td>
<td></td>
<td>Trusted knowledge brokers in communities (e.g. citizen report cards, complaint lines).</td>
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<tr>
<td></td>
<td>Quality measurement</td>
<td></td>
<td>Patient education.</td>
</tr>
<tr>
<td></td>
<td>Demand-side financing coupled with quality incentives.</td>
<td></td>
<td>Reduce information costs.</td>
</tr>
<tr>
<td></td>
<td>Gender-sensitive service delivery options.</td>
<td></td>
<td>Gender-centric demand-side financing options (including vouchers, transfers).</td>
</tr>
</tbody>
</table>

APPENDIX

**Table A: Specific innovations that have made health markets more effective and equitable**

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Example</th>
<th>Location and funding source</th>
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<tbody>
<tr>
<td>Demand-side financing to reduce the out of pocket costs of care (direct and indirect).</td>
<td>Voucher programs subsidise demand among priority population groups for specific under-utilised health services of known cost-effectiveness. Liked to outputs, not inputs. Can also be used in conjunction with accreditation of suppliers. Studies have found studies and reviews have found short-term utilization gains for health voucher programs (Bellows, <em>et al.</em> 2013). xlii</td>
<td>Tanzania – treated mosquito nets (Mushi, <em>et al.</em> 2003).xliii</td>
</tr>
<tr>
<td></td>
<td>A Government organised voucher program to incentivise obstetricians and gynaecologists to treat women below the poverty line. Providers receive an advanced payment and are then additionally compensated after 100 deliveries. Benefit package to patients also includes medicines and transport and compensation for carer’s lost wages while in attendance.</td>
<td>Kenya – reproductive care to poor women (Kenya voucher programme, 2006).xlv</td>
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<td></td>
<td>Conditional cash transfers are a pro-poor social protection mechanism that blends cash payments with service utilisation. Found to be effective in increasing the awareness (and use) of preventive services and sometimes improving health (Lagarde, <em>et al.</em> 2007) xvi Such conditionality has been found to be significant in promoting certain behaviours in recipients, such as preventative health care visits and sending girls to primary school (Akresh, <em>et al.</em> 2013)xvii (Akresh, <em>et al.</em> 2012)xviii</td>
<td>Rwanda – maternal health (Skiles, <em>et al.</em> 2013)xlv</td>
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<tr>
<td></td>
<td>Since 2001 Action for Health, has been offering vouchers for reproductive health. In late 2014 they will expand significantly to offer 9 new services, including cataract, which they have identified as a cost effective treatment, and one which needs some ‘market stimulation’. Funding for vouchers across the 10 services will cost around US$5m per annum. US$150 will be provided for cataract surgery, which is slightly less than what private hospitals currently charge, though it is hoped that the increased throughput will reduce unit costs by stimulating competition and improving efficiency. The vouchers will be available only for the poor and near poor and will also reimburse patients for their transportation cost and hospital services at referral hospitals, where Health Equity Funds are not available.</td>
<td>Vietnam – Patients are provided with free drugs when they present for an annual eye screen for diabetic retinopathy</td>
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<td></td>
<td>Community loan funds are part of a suite of measures that have been used to increase utilization of health facilities by providing a pool of funding for transport. A review of transport schemes for pregnant women shows some evidence that community-based loan funds as part of a multifaceted intervention have positive effect. However questions remain regarding sustainability (Nwolise, <em>et al.</em> 2014).xlix</td>
<td>Action for Health (Cambodia, supported by international funding, German aid and EPOS health management consulting)</td>
</tr>
</tbody>
</table>
### Risk pooling mechanisms reduce the out-of-pocket costs of care *

The combination of prepayment of health expenses, combined with the diversification of risk amongst a large group of people, is the essence of all universal health insurance systems. It adds a layer of certainty to individuals’ health expenditures as well as reducing the overall level of spending for each individual in the pool below what it otherwise would have been.

Bottom-up, grass-roots health insurance approaches, such as such as local community-based health insurance (CBHI) systems, are essentially based on the same premise though on a much smaller scale.

Anda Pradesh: a community fund for eye care was created on the basis of the participation of all members of a captive community based on a payment of one rupee per person per month on a yearly basis for the entire family and covered a complete eye examination at a secondary level eye care centre, including cataract surgery with intraocular lens (IOL) implantation when needed. A noticeable increase in access to eye care was observed.

### Networking and self-regulation to locate services in communities, improve patient knowledge and trust.

A franchising model in which rural community members are trained to become “Vision Entrepreneurs” (VEs), capable of providing vision screenings and identifying common eye conditions. One of the marketing strategies that VEs rely on in order to sell their products (such as ready-made spectacles) is door-to-door sales. Products are sold at a price point that is affordable for poor patients and services/products are designed to meet this price. Through a word-of-mouth referral system, they establish trust and rapport, increasing the VEs’ credibility within the community.

### Supply chain improvements to improve quality and reduce transactions costs.

Revolving loan facility helps members of the K-Met social franchise network of reproductive services to overcome the capital constraints of making value-adding and quality improvements to their practices.

<table>
<thead>
<tr>
<th>Community based health insurance schemes in Africa and Asia.</th>
<th>Anda Pradesh: a community fund for eye care was created on the basis of the participation of all members of a captive community based on a payment of one rupee per person per month on a yearly basis for the entire family and covered a complete eye examination at a secondary level eye care centre, including cataract surgery with intraocular lens (IOL) implantation when needed. A noticeable increase in access to eye care was observed.</th>
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<tr>
<td>Vision Spring (India, Acumen Fund and philanthropic investors)</td>
<td>A franchising model in which rural community members are trained to become “Vision Entrepreneurs” (VEs), capable of providing vision screenings and identifying common eye conditions. One of the marketing strategies that VEs rely on in order to sell their products (such as ready-made spectacles) is door-to-door sales. Products are sold at a price point that is affordable for poor patients and services/products are designed to meet this price. Through a word-of-mouth referral system, they establish trust and rapport, increasing the VEs’ credibility within the community.</td>
</tr>
<tr>
<td>Health Force (Bangladesh, DFID and SIDA)</td>
<td>Reduce the importance of traditional healers in communities by locating healthcare and family planning in remote communities by recruiting, and training community health workers, utilising local shops and referrals through telemedicine. Introduces a level of accountability by focusing on networking community health workers under a single brand providing training and monitoring performance to establish brand identity and credibility.</td>
</tr>
<tr>
<td>Sun Network (Myanmar, Bill and Melinda Gates Foundation, UNPFA, and an anonymous donor)</td>
<td>To improve early diagnosis doctors and community health workers under the ‘Sun Network’ are provided training accreditation and supervision. Community-level workers provide messages, basic products and refer patients to accredited doctors who already serve low-income communities. Fees are charged at a negotiated low rate and subsidised by donors. Members who fail to meet standards are removed from the program.</td>
</tr>
<tr>
<td>K-Met (Kenya, self-financed)</td>
<td>Revolving loan facility helps members of the K-Met social franchise network of reproductive services to overcome the capital constraints of making value-adding and quality improvements to their practices.</td>
</tr>
</tbody>
</table>
## Practical pathways to universal eye health – improving the availability, accessibility, affordability and acceptability of eye care services

### Social enterprise model to deliver quality services cheaply and reduce the out-of-pocket costs of care.

<table>
<thead>
<tr>
<th><strong>Largest and most productive private eye care facility in the world. Operates on social enterprise business model. Includes -house manufacturing of intraocular lenses; Cataract Surgery; Screening Services reaches rural areas through outreach camps and internet kiosks (which rely on telemedicine for diagnoses in the rural areas). Cost of cataract surgery is $30; 70 per cent of patients receive care subsidized or free; outcome data show high quality of care; model replicated through consulting branch.</strong></th>
<th><strong>Aravind eye hospital (India, self-financed)</strong></th>
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</thead>
</table>

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<thead>
<tr>
<th><strong>Tilganga: Sub-speciality eye hospital with highly standardised protocols keep costs low. Manufactures intra-ocular lenses locally to keep input costs low. Uses an internal cross-subsidy model in which service price is determined by the quality of accommodation, which ensures services are available for the poor (both in-patient and through outreach) and costs are recovered. Hospitals are managed to prioritise solvency rather than profit, though net operating margins (excluding grants) are still slightly negative (Deloitte, 2014, p21).</strong></th>
<th><strong>Tilganga eye hospital (Nepal, self-financed with support from NGOs)</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Lifespring: a network of maternal and childcare hospital franchises targeted at low-income patients. A focus on throughput, standardisation and specialisation of high-demand services (including a pharmacy). It refrains from making investments in infrastructure required by very few customers. Maintains quality by rigorously benchmarking across the Lifespring network.</strong></th>
<th><strong>Lifespring Hospital (India, jointly owned by Acumen Fund and HHL Lifecare Ltd)</strong></th>
</tr>
</thead>
</table>

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<thead>
<tr>
<th><strong>A social enterprise development program specifically designed to support health systems already in place. Not specifically healthcare related but rather businesses that fills critical gaps in in infrastructure, transport and logistics, and community worker support – “the last mile”. Creates positive social impact and financial return by contracting with health providers to expand health provider’s customer base.</strong></th>
<th><strong>VillageReach, (Mozambique, received support from various foundations, Mozambique and Dutch governments)</strong></th>
</tr>
</thead>
</table>

### Provider purchasing and contracting mechanisms.

<table>
<thead>
<tr>
<th><strong>Performance based financing (PBF) is a potentially valuable tool because it establishes a contractual relationship with providers that can be targeted at both the demand and supply barriers in the health market. An important feature is the decision-making autonomy provided to suppliers about how best to deliver the desired outcome. Morgan (2010) found that such flexibility alone improved the efficacy of attempts to improve the quality of and access to health services at private not-for-profit health facilities in Uganda. Has been by governments and donors in numerous locations with various degrees of success.</strong></th>
<th><strong>Burundi (The Fred Hollows Foundation)</strong></th>
</tr>
</thead>
</table>

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<tr>
<th><strong>All eye health services available to the public in Burundi are provided by the private sector. Services tend not to extend to rural areas. Working with Clinique de l’Oeil - a leading private provider, which has developed a nationwide brand recognition, and is known for its good quality clinical and surgical services – The Fred Hollows Foundation is establishing establish a fee-for-service incentive payment to extend screening/surgical programs to previously untreated rural areas.</strong></th>
<th><strong>Philippines (The Fred Hollows Foundation)</strong></th>
</tr>
</thead>
</table>

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<tr>
<th><strong>A project to encourage private ophthalmologists to utilise public facilities and treat indigent families within the Philhealth insurance scheme. In the Tarlac Provincial Hospital Eye Centre (TEC), the Provincial Government and the hospital arranged to increase ophthalmologists’ profit share from treating patients in government hospitals. Twelve private ophthalmologists treat patients but do not charge consultation fees nor receive salaries; they instead obtain professional fees for surgeries – receiving 40 per cent of the Philhealth hospital case fee (P15,000) (previously, the ophthalmologist received only around 20 per cent with 60 per cent channelled to the hospital 20 per cent divided among other staff). The program has lifted the cataract surgical rate of TEC by 230 per cent to a point where it now does 75 per cent of all cataract surgeries in the Province</strong></th>
<th><strong>Philippines (The Fred Hollows Foundation)</strong></th>
</tr>
</thead>
</table>
Table B:

<table>
<thead>
<tr>
<th>Goal</th>
<th>Potential benefits</th>
<th>Examples of models</th>
</tr>
</thead>
</table>
| Reduce fragmentation of providers                | • Increase transparency, reduce informality, and create visibility and legality  
• Make it easier and less costly to regulate (reduce both cost and potential principal-agent problems)  
• Reduce transaction costs/information costs  
• Increase oversight                                                                                          | • Franchises  
• Provider networks  
• Integrated models (pharmacy or clinic chains)  
• Professional associations                                                                                       |
| Change provider incentives and increase monitoring | • Align provider incentives with patient need for quality, affordability, and access  
• Sharpen the focus on quality by making patient volumes and payments contingent on meeting standards  
• Strengthen the ethics and self-accountability of the private sector (foster ethical behavior, create standards) | • Network (HMO) models  
• Accreditation or licensing through professional association or other independent entities  
• Franchises  
• Pay-for-performance mechanisms  
• Any public or private demand-side financing mechanism (insurance, vouchers), when coupled with purchasing mechanisms designed to improve quality |
| Provide subsidies for target populations and high-impact interventions | • Increase access to higher quality care for the poor, create incentives for private providers to serve the poor  
• Increase use of high-impact effective interventions                                                                                           | • Insurance  
• Vouchers                                                                                                          |
| Educate patients to demand the most beneficial services and reduce asymmetries of information | • Increase demand for effective interventions, which may in turn increase supply  
• Reduce asymmetries of information                                                                                       | • Social marketing  
• Rural cooperatives  
• Conditional cash transfer programs  
• Trusted knowledge brokers (citizen report cards, citizen complaint lines, consumer associations) |
| Use technologies that provide access and improve quality | • Increase efficiency  
• Improve quality and consistency                                                                                                             | • Telemedicine  
• Call centers  
• Kiosks  
• Electronic medical records                                                                                          |
Practical pathways to universal eye health – improving the availability, accessibility, affordability and acceptability of eye care services

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*World Health Organization (2009) op cit
*Feng, K., K. Flick, K. J. Tzu, M. He and N. Congdon (2012) "Williness to pay for potential enhancements to a low-cost cataract surgical package in rural southern China", *Acta Ophthalmologica*, vol. 90, pp. e54–e60
*Vaidyanathan, K. et al. (1999) op cit.

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This paper outlines the stated importance of a health strengthening approach to successfully achieve the Vision2020 goal, the reduction in the prevalence of avoidable blindness by 25 per cent by 2019 on a 2010 baseline. It also highlights the gaps that exist in the evidence base to practically inform integration and implementation.
The world is calling for a health-systems approach to eye care

In 2013 the World Health Assembly adopted the strategy “Universal Eye Health: A Global Action Plan 2014-2019”. The Global Action Plan is centred on the achievement of the VISION 2020 goal of a 25 per cent reduction in the global prevalence of avoidable visual impairment by 2019. Towards this goal, the Global Action Plan’s second objective is:

“The development and implementation of integrated national eye health policies, plans and programmes to enhance universal eye health with activities in line with WHO’s framework for action for strengthening health systems to improve health outcomes (emphasis added).”

The Global Action Plan goes on to note:

“Elimination of avoidable blindness depends on progress in other global health and development agendas, such as the development of comprehensive health systems, human resources for health development, improvements in the area of maternal, child and reproductive health, and the provision of safe drinking-water and basic sanitation. Eye health should be included in broader non-communicable and communicable disease frameworks, as well as those addressing ageing populations. The proven risk factors for some causes of blindness (e.g. diabetes mellitus, smoking, premature birth, rubella and vitamin A deficiency) need to be continuously addressed through multi-sectoral interventions.”

Historically eye care services in low- and middle-income countries have tended to be stand-alone, programs delivered by non-government actors in parallel to the mainstream health system. This has included independent supply chains, workforces, information platforms, financing, and planning. This is known as a vertical program, which refers to the focused, proactive, disease-specific interventions on a massive scale. A health-systems-strengthening approach, in contrast, focuses on strengthening across the broader primary health care system, linking and strengthening services. It is therefore horizontal in nature, referring to the integrated, demand-driven, resource-sharing among health services.

However, comparing the two types of programming in such a way creates a false dilemma, because both types of programming are need to coexist. Some authors have referred to this coexistence as a “diagonal” approach, that is, the proactive, supply-driven provision of a set of highly cost-effective interventions that bridge health clinics and homes.

What is a health system?

The World Health Organisation (WHO) defines a health system as consisting of “all organizations, people and actions whose primary intent is to promote, restore or maintain health.” Ultimately, health systems aim at enhancing health and health equity, responsively, and in a financially fair way, while making the most efficient use of the resources available. WHO has developed a model to describe the core components or six “building blocks” that are essential for successful health systems. These include:

1. Good health service delivery;
2. A well performing health workforce;
3. A well-functioning health information system;
4. Equitable access to high-quality essential medical products, vaccines and technologies;
5. An adequate health financing system; and

---

1 Against the baseline data from 2010, when the global prevalence was estimated at 3.18 per cent meaning the target is a reduction to 2.17 per cent
6. Strategic and effective leadership and governance (stewardship).

Figure 1 outlines how these six building blocks of a health system interact to translate into health outcomes.

![Figure 1](image)

Adapted from: Blanchett and Patel (2012, p3); World Health Organisation (2007).

Health systems strengthening means providing and coordinating adequate levels of all of these components in order to improve the coverage quality, equity and safety of the overall health system. The ultimate aim is that people are able to get the health care they need – including health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services – when they need it and without suffering financial hardship. Health services, in turn, may be drawn from public and/or private health providers.

**Where do eye care services fit in?**

Comprehensive eye health systems provide a spectrum of services from primary through to tertiary care, including: education and prevention, screening, provision of services for refractive error, and medical and surgical eye care.

Historically in low- and middle-income countries, eye care services have been delivered through vertical programs, meaning that they have been focused interventions with isolated, independent planning, staff and infrastructure. For example, trachoma treatment and cataract surgeries traditionally have relied on parallel supply chains of drugs, external non-government funding, and specialized staff and clinics (e.g. eye facilities only delivering eye care services).

Yet the health system components required to deliver eye health care are the same as those of the broader health system. Cataract surgery – the most commonly performed surgery in the world – provides a good demonstration of how many different elements of the wider health system must come together every single time. Besides a trained surgeon, available equipment (e.g. an operating microscope), consumables and well-trained support staff (a trained nurse or assistant), surgery needs to occur within a facility (e.g. a hospital or clinic) with appropriate utilities including electricity and water. The delivery of resources relies
Eye Care within a Health System Strengthening Approach

on a supply chain. This whole process has to be documented, managed and planned. And all of this requires funding relying on revenue raising mechanisms used to fund multiple other activities.\textsuperscript{m}

To achieve greater efficiencies and sustainability within national budgets, the WHO and others have called for greater integration of eye care within routine or mainstream health systems, both public and private. Given the importance of vision to economic productivity, quality of life and longevity, essential eye care should be considered within universal health coverage strategies.

**The changing pattern of eye disease means the importance of integration will continue to grow**

Integration is likely to be increasingly important in light of the trends of global ageing and the rise of non-communicable diseases (see Briefing Paper 2). These will mean that the needs of low- and middle-income countries’ eye care needs will shift from those requiring single or campaign-based interventions (e.g. treating river blindness or conducting cataract surgical camps) to the management of chronic eye diseases such as diabetic retinopathy and age related macular degeneration.\textsuperscript{n} There will also be a growing need to respond to the growth of eye disease linked to interventions in other parts of the health system (e.g. retinopathy of prematurity and maternal and child health services).

These shifts provide an impetus to promoting linkages between primary eye care and primary health care. Some potential areas of overlap are shown below (Figure 2).

**Figure 2**

![Potential intersections between eye health and mainstream health services](image)

Source: Dr Kate Taylor
But how to achieve integration and a health-systems strengthening approach for eye health?

There is a very limited evidence base for what integration of eye health care services into the mainstream health system means practically and across the primary, secondary and tertiary levels of health services. The practical guidance given by the Global Action Plan on critical steps to integrate eye health into mainstream health systems includes a number of features:

- Secure adequate financial resources to improve eye health and provide comprehensive eye care services integrated into health systems through national policies, plans and programs:
  - Secure inclusion of primary eye care into primary health care.
  - Ensure funding for eye health within a comprehensive integrated health care service.
- Develop and maintain a sustainable workforce for the provision of comprehensive eye care services as part of the broader human resources for health workforce:
  - Undertake planning of human resources for eye care as part of wider human resources for health planning, and human resources for eye health planning in other relevant sectors.
- Make available and accessible essential medicines, diagnostics and health technologies of assured quality with particular focus on vulnerable groups and underserved communities, and explore mechanisms to increase affordability of new evidence-based technologies:
  - Ensure existence of a national list of essential medical products, national diagnostic and treatment protocols, and relevant equipment.
  - Ensure the availability and accessibility of essential medicines, diagnostics and health technologies.
- Include indicators for the monitoring of provision of eye care services and their quality in national information systems.

Along similar lines, du Toit et al. note that a “realignment of eye health in the primary health care agenda will require context specific planning and a holistic approach, with careful attention to each of the health system components and to the public health system as a whole.” The authors go on to diagram the overlaps between the building blocks identified in WHO’s health systems strengthening approach, the health systems components identified in the WHO Ouagadougou Declaration on primary health care and health systems, and the Vision 2020 pillars, shown in Figure 3.

![Figure 3](image-url)
The operational challenge facing eye health – in this case based on a literature review focusing on sub-Saharan Africa, but applicable more widely – is neatly summarised by Du Toit, *et al.*:

“Particular components of the health systems framework lacking evidence are service delivery, equipment and supplies, financing, leadership and governance. There is some information to support interventions to strengthen human resources at all levels, partnerships and community participation; but little evidence showing their successful application to improve quality of care and access to comprehensive eye health services at the primary health level, and referral to other levels for specialist eye care.”

The limited evidence that does exist shows that integration and alignment of services can lead to greater sustainability of eye care service—funding shifts from external project-based funding to the usual health budgeting processes. It also points to greater use and impact when eye services are perceived to be compatible with existing services.

There is, however, very little evidence on the integration of vertical eye health programs in mainstream horizontal activities or seeking the benefits of “diagonal” services. The concept of diagonal interventions describes using a targeted intervention with the dual goals of addressing a priority health issue and enhancing other health system building blocks. There are few proven examples, but the potential benefits make further operational research and trials highly desirable.

**Conclusions**

It is recognised that the evidence base around integration of eye health services with mainstream health systems is deficient and in need of development through research and practice. The rationale for integration remains compelling, firstly as eye health services are unlikely to reach necessary scale as purely vertical programs and secondly as their sustainability in terms of financial commitment and appropriateness for the evolving disease burden.

While this indicates the need for further research, it also underscores the importance of pilot programs to trial the introduction of eye care into health systems approaches and to deepen the evidence base.
Bibliography

b World Health Organization (2013), op cit, p2
c World Health Organization (2013), op cit, p6
g ibid
n ibid