

A hand holds a pair of black-rimmed glasses in front of a blurred vision chart. The chart contains various letters and symbols, some of which are visible through the lenses of the glasses. The text 'THE HIGH COST OF LOW VISION' is centered on the right lens.

THE HIGH
COST OF
LOW VISION

The Evidence on Ageing and the Loss of Sight



INTERNATIONAL FEDERATION ON AGEING
Global Connections

"AS THE 21ST CENTURY'S SEMINAL CHALLENGE OF POPULATION AGEING LEADS TO INCREASING PREVALENCE OF DETERIORATING VISION, it brings about huge social, personal, and economic consequences. Yet, with proper and effective attention, including wellness and nutrition throughout life, early screening, diagnosis and treatment, and biomedical and surgical solutions, vision deterioration and loss no longer has to be a presumed condition of ageing. This report is both timely and critical as a tool for raising awareness of and driving solutions for preventable vision loss, which can have a positive and profound impact on economic growth and the human condition."

KATHY SPAHN, PRESIDENT AND CEO, HELEN KELLER INTERNATIONAL

" IFA'S REPORT HIGHLIGHTS THE CRITICAL NEED FOR ACTION AND INVESTMENT IN PREVENTIVE EYE HEALTH. By focusing on prevention and early detection of visual impairments, we are promoting...a more active and productive older population, which can drive economic activity and mitigate costs of care and other financial burdens associated with ageing and chronic diseases. Across the globe, new policies to improve the diagnosis, management, and care associated with preventable eye diseases – especially among ageing populations – will go a long way in alleviating the burdens triggered by age-related vision loss."

FRANCISCO RODRIGUEZ, MD, RETINA AND VITREOUS SPECIALIST, SCIENTIFIC DIRECTOR,
FUNDACIÓN OFTALMOLÓGICA NACIONAL, COLOMBIA

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SAVING EYESIGHT IS THE KIND OF
WORK THAT MAKES A DIFFERENCE IN
OUR WORLD, ESPECIALLY FOR AGEING
POPULATIONS."

DR MARGARET CHAN, DIRECTOR-GENERAL OF THE WORLD HEALTH ORGANIZATION, MARCH 2012

EXECUTIVE SUMMARY

VISION LOSS IS NO LONGER AN INEVITABLE PART OF THE AGEING PROCESS.

Thanks to innovations in diagnosis, biomedicine, nutrition, technology, and preventive care, people can age with strong, healthy vision. This is truly a transformation of ageing in the 21st century, because it makes it possible for older adults to remain mobile, engaged, independent, and economically active.

As the number of older adults explodes globally, it is both an ethical responsibility and a public health imperative to prevent avoidable vision loss. It is also great economic policy. Indeed, spending to prevent vision loss should be seen as an investment that facilitates social and economic engagement of ageing populations and thus creates cost savings for both individuals and health systems. We have in our grasp the potential to turn vision deterioration and loss into an artifact of history.

BACKGROUND

The global population is ageing, and individual life spans are longer than they have ever been before. In 2012, the over-60 population numbered 810 million – quadruple the size of this cohort in 1950, but not even half of the two billion population expected to be over-60 by 2050. With more people living longer, incidents of vision loss soar exponentially.

Vision loss – 80 percent of which is preventable – is currently the leading cause of age-related disability.

Worldwide, 285 million people are visually impaired, including 39 million who are totally blind. In developing countries, 94 million older people suffer from moderate to severe visual impairment – twice as many as those who suffer from significant hearing impairment.

Great strides have been made in preventing communicable eye diseases, but now action is needed to combat the dramatic growth in non-communicable age-related eye conditions like age-related macular degeneration (AMD). As the global population ages, vision loss will have a devastating impact on not only individuals but families, communities, and nations unless serious, proactive measures are taken.

VISION LOSS: UNDERESTIMATED AND MISUNDERSTOOD

Many people fail to recognize the extent to which vision loss has severe personal, social, and economic consequences. Vision loss not only cruelly alters the life of the person affected, but it takes an enormous toll on family members and caregivers. Moreover, vision loss is not an



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isolated health impairment. It often triggers depression and decreases productivity, functional ability, and quality of life.

Almost one-third of those with vision loss suffer from clinical depression – twice the rate among the general population of older adults. Additionally, older people who suffer from vision loss are more likely to struggle with mobility, pain and discomfort and anxiety. Vision loss not only severely impairs one’s ability to be independent and self-sufficient, but it also has a “snowball effect” on the health and wellbeing of older people, families, caregivers, and society at large. This cumulative effect is severely underestimated.

The costs of vision loss are high, especially when indirect costs are taken into account. The costs of prevention, however, are relatively low.

DIRECT AND INDIRECT COSTS OF VISION LOSS

According to AMD Alliance International, the direct costs of vision loss worldwide in 2010 were \$2.3 trillion. Indirect costs, such as lost productivity and provision of informal and family care, added another \$652 billion. By 2020, these costs are expected to rise to \$2.8 trillion for direct costs and \$760 billion for indirect costs.

One reason these costs are so high is that those with vision loss often require considerable formal and informal caregiving support. Annual indirect costs due to caregivers’ time, support, and direct service provision for people with severe visual impairment averages over \$47,000 per year. Also, people whose vision deteriorated from “normal” to blindness were nearly three-times as likely to need skilled nursing and be admitted to long-term care facilities.



AS THE NUMBER OF OLDER ADULTS EXPLODES GLOBALLY, IT IS BOTH AN ETHICAL RESPONSIBILITY AND A PUBLIC HEALTH IMPERATIVE TO PREVENT AVOIDABLE VISION LOSS.

The costs of vision loss are also high because of lost productivity in the workforce. Higher absenteeism, premature retirement, and premature death are all more common outcomes among those with vision loss. In the region anchored by the United States and Canada, AMD Alliance International estimates that the cost of absenteeism due to visual impairment in 2010 was nearly \$97 billion. As the over-60 population increases exponentially, so too will these costs unless action is taken.

COST-EFFECTIVENESS OF PREVENTIVE CARE

Research has shown that preventive care for vision loss is cost-effective. One study found that preventive injections considerably improved vision for one-third of patients and saved costs by reducing further visits and procedures. The figures are in reality much higher, once lost and regained productivity are taken into account.

Studies have also found that vision loss creates non-eye-related costs. In fact, for patients with vision loss, their non-eye-related medical costs are between \$2,000 and \$4,500 higher than those without vision loss.

NEXT STEPS

The demographic changes of the 21st century provide humanity with tremendous opportunities if healthy ageing leads to active, productive ageing. Vision loss, however, is a significant barrier to a positive aging outcome.

Proactive global action is needed to make healthy vision a public health priority.

PRIORITY ACTIONS INCLUDE:

- Integrating visual screening and other preventive eye-health interventions into public health practices for adults of all ages;
- Creating education and awareness programs that include vision-loss prevention, detection, and treatment regimens;
- Reimbursing both treatments and preventive eye health interventions to ensure positive impact on system-wide costs and support for future innovation;
- Developing and utilizing tele-health mechanisms to provide greater access to screening and treatment regardless of geographical location;
- Advocating for vision loss to become widely recognized as a preventable health condition; and
- Conducting more research on the outcomes and efficacy of preventive eye health.

THE HIGH COST OF LOW VISION

THE EVIDENCE ON AGEING AND THE LOSS OF SIGHT



BACKGROUND: POPULATION AGEING & GLOBAL COSTS OF VISION LOSS

Just as the 20th century was defined by youth, the 21st will be defined by ageing. The ageing of the population is a global phenomenon, and it will have implications throughout all facets of life.

Twenty years ago, when policymakers first recognized that the population was ageing, they considered how it would impact wealthier nations. That view is no longer relevant. While Japan may be the only country whose older citizens comprise 30 percent of the population, by 2050 there will be 64 other countries with this ratio of older people. Moreover, older age groups are growing fastest in developing countries, and by mid-century 80 percent of the aged population will live in developing countries.¹

Globally, 58 million people turn 60 every year, and two people celebrate their 60th birthday every two seconds. In 2012, there were nearly 810 million people over the age of 60, almost quadruple the amount there were in 1950. Within a decade, this number will surpass one billion, and by 2050 the 60-plus cohort will reach two billion.²

As life expectancies increase, there is a dramatic rise in age-related conditions, including and especially eye-related diseases. Today, 285 million people worldwide are visually impaired, including 39 million who are totally blind.³ The major causes of vision impairment include age-related macular degeneration (AMD), cataracts, diabetic retinopathy (DR), and glaucoma.

AMD is the leading cause of legal blindness in the elderly in Western societies,^{4,5} afflicting an estimated 25 million to 30 million people worldwide,⁶ and the rise of multiple chronic conditions among older adults will only exacerbate the situation. Globally, AMD is responsible for 8.7 percent of all blindness.⁷ Neovascular (wet) age-related macular degeneration, while accounting for about 10 percent of all AMD cases,⁸ causes 90 percent of severe visual loss resulting from AMD.^{9,10} Recent studies show that wet AMD is preventable with the proper treatments, provided there is increased awareness of and access these treatments.¹¹ Further, the World Health Organization (WHO) estimates that, by 2025, 300 million people will suffer from diabetes, up from 177 million in

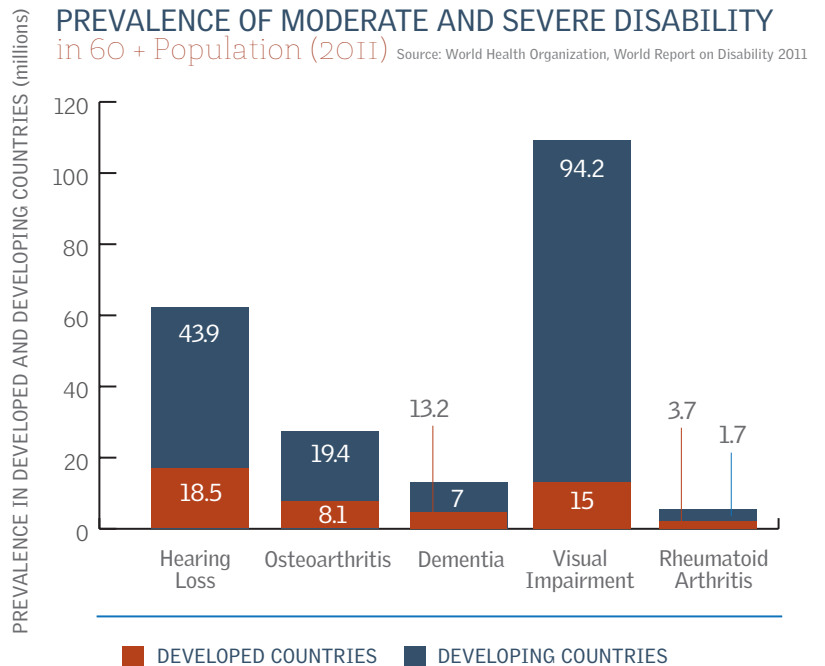
2000. This increase will lead to more cases of diabetic retinopathy, a very common complication of diabetes that can lead to blindness.¹²

In developing countries, 94 million older people suffer from moderate to severe visual impairment, twice as many as those who have significant hearing impairment, which is the second leading cause of old-age disability.¹³ The disquiet over vision loss is also very high. A recent survey of Europeans found that vision loss is the top health concern about ageing after memory loss, exceeding fears about other diseases by wide margins.

Globally, it is estimated that AMD affects as many people as Alzheimer’s disease and related irreversible dementias. Yet, awareness campaigns for vision impairment receive far fewer resources than those for Alzheimer’s and other age-related diseases.

Vision loss and blindness are often misunderstood. Many fail to realize the extent to which blindness and vision

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impairment not only affect older adults, but also create significant social, economic, and personal costs. It is mistakenly believed that vision loss is a normal part of ageing. It isn't; 80 percent of visual impairment is preventable.¹⁴

The economic costs of visual impairment are high. According to AMD Alliance International, the direct costs of vision impairment in 2010 were \$2.3 trillion. Indirect costs, such as lost productivity and provision of informal and family care, added another \$652 billion. By the end of the decade, those costs are expected to rise to \$2.8 trillion for direct costs and \$760 billion for indirect costs.¹⁵

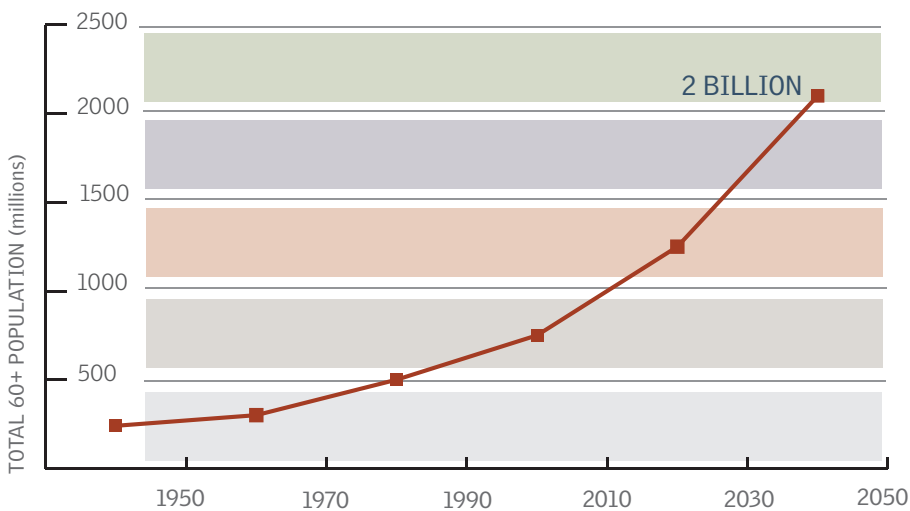
At the same time, vision loss among the ageing population is often viewed as unrelated to other concerns, such as dependency, quality of life, and lost productivity. Links between deteriorating vision and other age-related disabilities, such as depression, are also often ignored.

With the population ageing rapidly, preventable blindness must be made

OLDER PATIENTS WITH VISUAL IMPAIRMENT are more likely to have moderate to severe problems with daily activities, mobility, pain and discomfort, anxiety or depression, and taking care of themselves.

GROWTH OF GLOBAL 60+ POPULATION

Source: United Nations, World Population Prospects: The 2010 Revision



a top public health priority. Great strides have been made in combating communicable eye diseases, but now action is needed to combat the dramatic growth in non-communicable age-related eye conditions. Doing so requires a better understanding of the complex and far-reaching impacts of vision loss. Numerous studies provide insights into the impact that visual impairment has on older people's lives, its high costs, and the cost-effectiveness of employing prevention, detection, and treatment programs.¹⁶

AGEING AND THE IMPACT OF CHANGING VISION

Vision loss is often considered separate and even distant from other age-related chronic conditions, such as depression, osteoporosis, and dementia, which all impact on the functional ability, quality of life, and productivity of older people. Vision loss has without question an ac-

cumulative negative effect on the health and well-being of an older person.

Recent research has shed light on the manifestations of many of these chronic conditions that traditionally come with age. For example, four-in-five participants in one clinical trial, with a median age of 80 years, had at least one co-morbid medical condition.¹⁷ Hypertension, heart disease, and thyroid disorders were most prevalent. Almost one-third suffered from clinical depression, a rate that was twice as high as the general population of older adults.

Loss of vision has a documented impact on a person's quality of life and ability to function. Evaluating daily activities such as meal preparation, bathing, walking, and reading, older adults with age-related eye disease had a lower quality of life and a compromised ability to function independently.¹⁸ Those with eye disease in both eyes suffered from a greater loss of quality of life and functionality than those participants with only one eye affected.

Older patients with visual impairment are more likely to have moderate to severe problems with daily activities, mobility, pain and discomfort, anxiety or depression, and taking care of themselves. As a result, their quality of life declines as vision loss progresses.



VISION LOSS HAS WITHOUT QUESTION AN ACCUMULATIVE NEGATIVE EFFECT ON THE HEALTH AND WELL-BEING OF AN OLDER PERSON.

OPHTHALMOLOGICAL COSTS

Vision loss has significant social, clinical, and economic consequences among the older population, some of which may preempt premature admission to acute and long term care settings. Therefore it should not be surprising that the direct costs of ophthalmological services are less than non-ophthalmological services such as nursing homes and in-home care. Nevertheless, understanding costs associated with eye specialists is a critical first step for identifying cost-effective prevention and screening strategies.

A 2006 study using data from Medicare beneficiaries underscores the value of screening and then treating eye disease soon after diagnosis. Looking at four diseases –

AMD, cataracts, DR, and glaucoma – results showed that 70 percent of the costs incurred during the first year after an initial diagnosis equated to the total cost for the five-year period examined.

A further study found real cost savings in managing and slowing the progression of neovascular age-related macular degeneration.¹⁹ Eye

injections were given as part of a “treat and extend” regimen. Over two years, the number of office visits and injections declined, resulting in lower medical and other clinical costs. Most importantly, further vision loss was prevented, and vision for one-third of the patients actually improved.

DIRECT NON-OPHTHALMOLOGICAL COSTS

As patients with vision impairments age and conditions progress, more intensive and perhaps invasive non-ophthalmologic services are needed. Additional services – including long-term care, skilled nursing home care, and treatments for other related conditions – cost more than the direct payments to doctors.

UNPAID CAREGIVING IS MORE COMMON than paid in-home care services, and it often leads to absenteeism and lost wages for the caregivers.



NOT ONLY ARE IN-PATIENT,
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A 2007 study of Medicare patients with vision loss found a direct correlation between non-eye-related costs and the severity of the vision lost. Eye-related costs were less than non-eye-related medical costs, regardless of the severity of vision loss.²⁰ Non-eye-related costs were much higher than the costs for patients with normal vision, ranging from an additional \$2,193 for those with moderate vision loss to \$4,443 for those who were classified as legally blind.

People whose vision impairment resulted in blindness were more than 1.5 times as likely to experience depression or injury, and they were nearly three times as likely to need skilled nursing and long-term care

facilities.

The cost of each type of non-eye-related service was progressively higher, depending on the severity of vision loss. Excess costs associated with treating depression exceeded the additional costs of injuries. For example, those with severe vision loss had \$709 in higher costs associated with depression, compared to \$357 in higher injury costs.²¹

Hospital costs are also higher. Not only are in-patient, non-ophthalmologic costs higher for visually impaired patients, as injuries from falls are

common, but they tend to stay in the hospital nearly 2.5 days longer than patients with normal vision. Likewise, older patients with vision problems are almost twice as likely to be discharged to a nursing home as an older person without vision impairment.²²

A study in the United Kingdom shows the extent to which patients with serious vision loss require additional non-medical services.²³ People with neovascular age-related macular degeneration had average annual costs seven times greater than those without AMD. The biggest non-medical need was for home care assistance to perform daily tasks.

Economic data from four major European countries

BEYOND THE COST OF MEDICAL CARE AND NON-MEDICAL SERVICES, visual impairment imposes many indirect costs. Chief among these is the loss of productivity by the person with vision loss, followed by higher absenteeism and premature retirement.

looked deeper into non-medical costs, finding that the major costs of visual impairment included loss of income, the social and economic burden on caregivers, and the need for paid assistants.²⁴

Caregiving has significant direct and indirect costs. A survey of individuals with AMD found that more than one-third received assistance an average of 4.7 days per week with 3.7 hours per day. Nearly one-third (28 percent) of these services was paid, with the remainder provided by spouses or other volunteers.²⁵ Another study found that annual indirect costs due to caregivers' time for people with severe visual impairment averages over \$47,000 per year.²⁶

INDIRECT COSTS

Beyond the cost of medical care and non-medical services, visual impairment imposes many indirect costs. Chief among these is the loss of productivity by the person with vision loss, followed by higher absenteeism and premature retirement. According to AMD Alliance International estimates, the economies of the region anchored by the United States and Canada lost nearly \$97 billion in 2010 due to absenteeism caused by visual impairment.²⁷

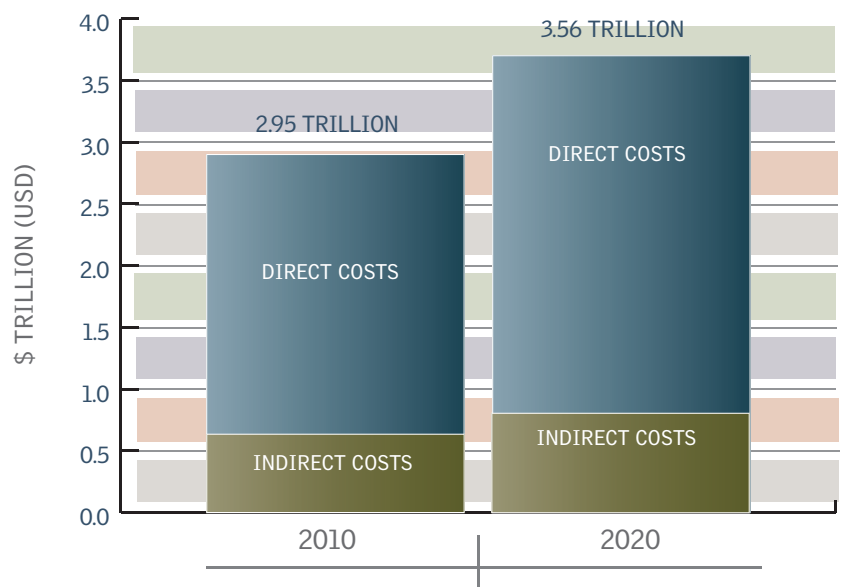
As life expectancy continues to increase, it is increasingly important that older adults stay active and productive. We are already wit-

nessing a new move to extend careers. Nearly 50 percent of older men and one in four older women (greater than 60 years old) remain in the workforce. Yet people with advanced AMD have much lower rates of employment and significantly lower incomes. Among older adults, the economic impact related to unemployment and income loss is significant. The cost to the United States' gross domestic product (GDP) due to AMD in 2004 was estimated to be \$1.6 billion as a result of unemployment and \$1.2 billion to lower wages – or a total loss of more than \$2.8 billion.

Labor force costs extend beyond the visually impaired. Unpaid caregiving is more common than paid in-home

WORLDWIDE COSTS OF VISUAL IMPAIRMENT

Source: AMD Alliance International, 2010



EMERGING DEMOGRAPHIC TRENDS and lifestyle choices – falling fertility rates, people living alone, the impact of urbanization, isolation and marginalization – will have an impact on indirect costs associated with vision impairment.

care services, and it often leads to absenteeism and lost wages for the caregivers.

Indirect costs must be in the equation when evaluating the cost-benefit of vision-loss prevention programs. A 2004 Australian study calculated both direct and indirect costs and compared them to the cost of an intervention program designed to reduce preventable blindness and vision loss through early detection, prevention, rehabilitation services, education, and research.²⁸ The study found a return on investment of nearly five times during the first year and more than six times over a lifetime of intervention. The bottom line is clear: cost savings from interventions can be substantial.

MORE RESEARCH NEEDED

Emerging demographic trends and lifestyle choices – falling fertility rates, people living alone, the impact of urbanization, isolation, and marginalization – will have an impact on indirect costs associated with vision impairment. There is a serious shortage of research associated with the costs of vision loss on the person and family, the community and nations. The social and economic impact associated with the provision of care for the ageing population of the future is the Achilles' heel for many developed countries.

Many families rely on older adults to help raise and care for children and grandchildren. As vision deteriorates as a result of preventable eye conditions, older people will no longer be able to assist in parenting, as their ability to care

for themselves declines. The social and economic impact of the reversal of this care equation must be discovered.

Research with a broader view of the complications brought by vision loss is also needed. Most vision-related research has focused on specific diseases, such as DR or AMD. Consequently, it is difficult to generalize the condition, circumstances, costs, and needs of all persons who are visually impaired or blind.

More studies need to be conducted to better determine the cost-effectiveness of prevention screening and treatment programs. These studies should focus on an individual's vision as well as that person's overall health, including secondary outcomes such as depression, falls, in-home care, long-term care, and nursing home admissions.

Finally, better standard definitions of vision loss and impairment need to be developed in order to more fully understand prevalence rates and associated costs. More accurate quantification of the burdens of vision loss will lead to better identification of the opportunities – both economic and human – that come with treatment and prevention.

NEXT STEPS

Vision-loss prevention, detection, and treatment strategies must be developed urgently. Vision loss is no longer an inevitable consequence of ageing. There is a social, ethical, and economic imperative and responsibility to invest in preventive strategies.



THERE IS A SOCIAL, ETHICAL, AND ECONOMIC IMPERATIVE AND RESPONSIBILITY TO INVEST IN PREVENTIVE STRATEGIES.

The demographic changes of the 21st century can lead to tremendous opportunities if healthy ageing leads to active, productive ageing. Vision loss is a significant barrier to the ends. Proactive global action is needed to make healthy vision a public health priority.

PRIORITY ACTIONS INCLUDE:

- Integrating visual screening and other preventive eye-health interventions into public health practices for adults of all ages;
- Creating education and awareness programs that include vision-loss prevention, detection,

and treatment regimens;

- Reimbursing both treatments and preventive eye health interventions to ensure positive impact on system-wide costs and support for future innovation;
- Developing and utilizing tele-health mechanisms to provide greater access to screening and treatment regardless of geographical location;
- Advocating for vision loss to become widely recognized as a preventable health condition; and
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