Campaign report

Cost oversight?

The cost of eye disease and sight loss in the UK today and in the future

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“It is clear that the numbers of people at risk of eye disease will rise sharply over the next decade. We have to invest more in early detection and access to treatment to ensure that the burden of sight loss, both to the individual and to society is contained and, if possible, declines.”

RNIB supporting blind and partially sighted people

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Introduction

We need to invest far more as a society to prevent and treat sight loss – and we need to do it now. Investment makes sense on both moral and economic grounds. This is the central argument of this report.

In the past, the case for intervention has been largely based on moral grounds. In short, sight is precious – sight is the sense we most fear losing (Endnote 1). Equally, we know that sight loss has a massively negative impact on people's quality of life, all too often leading to isolation and depression (2). Together, this provides a powerful argument for well-funded public interventions to identify and treat eye disease, in addition to targeted prevention campaigns. However, at a time of recession and an extremely tight public expenditure environment, the moral argument alone is unlikely to be strong enough. We need a compelling evidence-based economic case for investment. "Cost Oversight" provides this.

The importance of a strong economic case to support greater expenditure on the prevention, detection and treatment of eye disease was recognised in the UK Vision Strategy. This referred to RNIB research that put the total cost of sight loss at £4.9 billion in 2001–2002 (3). This study included not only the direct costs of services provided by Government but also indirect costs, such as independent living support provided by family and friends of blind and partially sighted people and lost productivity.

Recognising the importance of a strong and up-to-date evidence-base to support the implementation of the UK Vision Strategy in 2008, RNIB commissioned new research into the costs of eye disease and sight loss from two agencies, Access Economics and EpiVision. "Cost Oversight" is based on these two major new studies: "The economic impact of visual impairment in the UK adult population" and "Future sight loss in the decade 2010 to 2020" (4). They set out in painstaking detail the epidemiological and economic evidence that supports greater expenditure on the prevention and treatment of eye disease.

The epidemiology of sight loss

Both the Access Economics and the EpiVision reports provide evidence on the number of people with sight loss and the predicted growth through to 2020 and 2050.

The "big picture" figure from Access Economics is that in 2008 there were 1.8 million people in the UK living with sight loss; 1.6 million who were partially sighted (visual acuity <6/12 - 6/60) and 0.2 million blind people (visual acuity < 6/60). A little over half of this total (53 per cent) was accounted for by refractive error, that is, the simple fact of not wearing the right prescription glasses or contact lenses. However, amongst those who are blind, AMD was the main cause of sight loss (54 per cent).

The Access Economics research confirms that ethnicity is a major factor in relation to risk of eye disease. The black population has a higher risk than the white population of developing AMD at an earlier age but a lower risk of developing it after the age of 70. The black population also has a much higher relative risk of developing glaucoma and cataracts. Asian people are at a higher risk of developing cataracts than the black and white populations and also at a higher risk of developing diabetic eye disease than the white population. While the white population is more likely to experience sight loss due to refractive error, compared to the black population.

The Access Economics study confirms previous research findings that the number of people with sight loss will increase sharply through to 2050. They estimate the number will more than double to 3.99 million.

The EpiVision report focuses on the four main eye diseases in the period 2010–2020. They similarly project a sharp increase in sight loss. They estimate that in 2010 some 223,000 people will be either blind or partially sighted due to AMD and that this will rise to 292,000 by 2020 (a 31 per cent increase), assuming that 75 per cent of those with wet AMD are treated. In the case of glaucoma, a 25 per cent rise in the number of people experiencing sight loss is estimated over the decade, rising from 75,000 to 94,000. With cataract, a 20 per cent rise is forecast from

234,000 to 281,000. In the case of diabetic retinopathy (DR), a large and growing number of people will have the disease (over 1.04 million by 2020), but a relatively small number will be experiencing sight loss as a result. In 2010, it is estimated that some 66,000 people will be either partially sighted or blind with DR, rising to 76,000 by 2020 – a 16 per cent increase.

Such a sharp rise in the number of people with sight loss over the next decade is wholly unacceptable, given effective treatments are available. No one should have to live with partial sight or blindness when they don't need to. There is a clear imperative for action by those who commission and deliver eye care services.

Sight loss is expensive

The overarching message from "Cost Oversight" is that sight loss is very expensive, both to society and to the individual. Access Economics adopt a prevalence-based approach to measuring costs. That is, they focus on a particular year (2008) and identify the full range of costs associated with sight loss in that year, taking account of sight loss from all causes (including refractive error).

Access Economics identify direct health and social care expenditure, associated with sight loss in the UK in 2008, of £2.14 billion. The main elements of this total are £1.1 billion on hospital inpatient and outpatient treatment, £484 million on General Ophthalmic Services, £304 million on residential and community care and £158 million on prescriptions/drugs.

In addition, there are very significant indirect costs associated with sight loss. Foremost amongst these are the costs associated with informal care. Relatively few blind and partially sighted people assessed by local authority social care and social work departments end up receiving an on-going service. In the absence of adequate statutory care, it is left to family and friends to provide the support necessary for independent living. This informal support costs in the region of **£2 billion** a year, which includes such things as help in the home, reading mail, shopping, gardening and the provision of door-to-door transport. The other major indirect cost is that associated with the loss of productivity. The significantly lower employment rate experienced by blind and partially sighted people adds £1.6 billion a year to the overall costs of blindness.

These are the direct and indirect costs of eye disease and sight loss in the UK. However, in addition, sight loss has a major impact on quality of life and this is measured for the first time by the Access Economics research. Using the disability adjusted life years approach (see Appendix 2) they put a monetary value of £15.5 billion on the quality of life lost due to sight loss. **Taken together, the direct, indirect and quality of life costs of sight loss in the UK amounted to a massive £22 billion in 2008.** The different elements of this total are set out in Table 1.

Table 1 – Summary of costs associated with partial sight and blindness in UK adults 2008

	£ million
Direct costs	
hospital recurrent expenditure	592.74
non-admitted expenditure	507.99
prescribing expenditure	158.12
general ophthalmic services (GOS)	484.04
expenditure associated with injurious falls	25.10
research and development	13.99
residential care and community care services	304.69
capital and administration	58.22
Total – direct costs	**2,144.89**
Indirect costs	
lower employment	1626.70
absenteeism	79.85
premature mortality	2.38
informal care costs	2,029.70
devices and modifications	336.50
deadweight loss	268.59
Total – indirect costs	**4,343.72**
burden of disease costs	
years of life lost due to morbidity	14,530.67
years of life lost due to premature death	978.43
Total – burden of disease costs	**15,509.10**
Total – costs	**21,997.71**

Whereas Access Economics provide a forward projection of prevalence rates for sight loss to 2050, their forward projection of costs is limited to 2013. This is due to the uncertainties surrounding the development and approval of new treatments and the expected utilisation of new products, such as Ranibizumab (Lucentis).

Not surprisingly, given the increase in the elderly population over the next five years, direct and indirect costs are projected to increase significantly (by **£1.17 billion**), from **£6.47 billion** in 2009 to **£7.64 billion** in 2013. This includes an increase in health care expenditure from **£2.2 billion** to **£2.6 billion** and an increase in indirect costs from **£4.3 billion** in 2009 to **£5 billion** in 2013.

The EpiVision study adopts an incidence-based approach to measuring the costs of sight loss. They focus on the four main treatable causes of sight loss (AMD, cataract, diabetic retinopathy and glaucoma) and estimate the number of people experiencing sight loss from that disease in the base year (2010). This is the incidence of the disease and it is used to calculate total costs in the base year and the cumulative costs through to 2020. In contrast to the prevalence approach, people whose sight loss started before the base year are not included in this calculation.

This incidence-based approach is of particular value to health service commissioners, in that it allows them to estimate the returns from investing in sight-saving treatments.

The data provided by EpiVision includes the cost of detection, treatment, the provision of state and family (informal) care and lost productivity through underemployment and absence from work, but it excludes costs associated with reduced quality of life. The baseline cost of AMD in 2010 is estimated to be £1.6 billion, £0.99 billion for cataract, £0.68 billion for diabetic retinopathy and £0.54 billion for glaucoma.

The cumulative total cost for the four eye diseases, through to 2020, is over £37 billion.

Spend to save sight and money

Both research studies point in the same direction. More needs to be done to prevent avoidable sight loss. If we can provide early detection and access to treatment, then the cost of partial sight and blindness to the individual and to society will be contained – and may even decline. The key question is what interventions are both effective and cost-effective? This is explored in both studies.

EpiVision look in some detail at AMD and glaucoma. In the case of AMD, they note that the cost in the next ten years will be very dependent on the take-up of services, that is, how many eligible patients present for treatment with Lucentis. They compare two scenarios; one where 75 per cent of eligible patients are treated and another where 90 per cent are treated. Since dry AMD remains a significant cause of irreversible sight loss, changes made to treatment coverage for wet AMD do not make a major difference in terms of overall costs associated with AMD. An increase in coverage from 75 per cent to 90 per cent would increase costs from £16.43 billion to £16.67 billion.

However, the benefits to patients are considerable. First of all, in 2010, 90 per cent treatment coverage would result in approximately 2,100 fewer cases of sight loss. More importantly, over a decade, approximately 111,600 people would move from partial sight (visual acuity of 6/12 or worse) to good sight (better than 6/12) and 9,855 would move from blindness to partial sight, if 90 per cent treatment coverage could be achieved. With treatment coverage of 75 per cent, almost 16,000 fewer people would make the journey from partial to good sight and 1,400 would remain blind, rather than progressing to partial sight.

In the case of glaucoma, the EpiVision research explores the impact of higher detection rates. Glaucoma is called the "sneak thief of sight" because people can lose significant amounts of peripheral vision before they begin to notice that something is wrong with their sight. As a result, it is estimated that only 50 per cent of affected people are aware that

they have glaucoma or ocular hypertension (a main risk factor of glaucoma).

It is estimated that, in 2010, 308,000 people will be diagnosed with ocular hypertension, whereas 266,000 will have glaucoma. In 2020, this number will have increased to 360,000 for those with ocular hypertension and 327,000 for those with glaucoma. By 2020, the number of people with sight loss will have increased from 75,000 in 2010 to 94,000 and the increase will be particularly marked in people from African and African-Caribbean backgrounds.

By increasing the detection rate from the current 50 per cent to 75 per cent, the number of people with sight loss from glaucoma would only rise from 71,000 in 2010 to 89,000 in 2020 (against 75,000 in 2010 and 94,000 in 2020, under the 50 per cent scenario). At this detection rate costs would increase by £400 million over the decade, from £4.9 billion to £5.3 billion.

Saving sight through health education programmes

In the UK, the literature on the cost-effectiveness of eye health promotion work is limited. Recognising this, Access Economics were asked to focus on four possible interventions:

- promoting the prevention of eye injuries;
- improving access to integrated low vision and rehabilitation services
- increasing regular eye tests for the older population, over 60 years of age;
- improving access to eye care services for minority ethnic groups (MEGs).

All four interventions consisted of an education programme, to increase knowledge of the relevant eye health issues, although each campaign targeted different at-risk groups. For each intervention, three distinct areas were investigated: the inputs and their associated costs (for example, the costs associated with developing and implementing the new programme); outputs from the intervention (for example, an increase in the use of eye care services), and the outcomes associated with the outputs (for example, a reduction in the number of people experiencing partial sight or blindness in the target population).

The results indicate that the most cost-effective campaign is likely to be one that targets MEGs. This is because their access to eye care services is markedly lower than the general population and therefore undetected eye disease is likely to be more severe. An educational campaign using a variety of media and a road show taken to ten locations, heavily populated with MEGs, could result in a highly positive cost-effectiveness ratio (£1,230 per disability adjusted life year avoided). In the case of the three other interventions, the Access Economics team concludes that there are gains to be made but they are less clear-cut.

Next steps

"Cost Oversight" contains a powerful message and a warning: although sight is the sense we most fear losing, as a society we spend relatively little to prevent, detect and treat eye disease – in total around **£1.7billion** a year. This is a modest fraction of total NHS expenditure (1.9 per cent of the £89 billion net NHS expenditure in 2007–2008). It contrasts strongly with the total cost of sight loss (including reduced quality of life) that in 2008 was running at over **£20 billion**.

Given the massive cost to individuals and society, we should be spending much more on sight loss. It is also clear that the numbers at risk of eye disease will rise sharply over the next decade. We have to invest more in early detection and access to treatment to ensure that the burden of sight loss, both to the individual and to society is contained and, if possible, declines.

The UK Vision Strategy Implementation Plans (5) set out the range of national and local actions that are needed to tackle this challenge.

However, based on this report we recommend the following for immediate attention:

Increased funding and improved commissioning

Truly world class commissioning needs to ensure that:

- eye disease is detected early in all communities.
- patients have access to the best treatment options on the NHS with capacity issues being addressed promptly.
- patient outcomes are not compromised through delays in and cancellations of follow-up appointments.

Health education funded by Government

The Department of Health and Governments in the devolved nations need to take their responsibility for the nation's eye health seriously and fund campaigns that effectively convey key eye health messages to the public.

We need concerted efforts and greater investment to make this happen. No longer can we overlook the costs of sight loss. The moral and economic case is just too strong.

Appendix 1 – The UK Vision Strategy

The UK Vision Strategy is a ground-breaking UK-wide initiative which has brought together for the first time, people with sight loss, users of eye care services, eye health and social care professionals and statutory and voluntary organisations to produce a unified framework for action on all issues relating to vision.

The UK Vision Strategy has been developed in response to the World Health Assembly Vision 2020 resolution to reduce avoidable blindness by the year 2020 and improve support and services for blind and partially sighted people. The UK Vision Strategy responds to shortfalls in the UK's eye health and sight loss services and addresses the exclusion of blind and partially sighted people and widespread ignorance and apathy about eye health. The Strategy has three broad objectives:

- improve the eye health of the people of the UK
- eliminate avoidable sight loss and deliver excellent support to those with sight loss
- enhance the inclusion, participation and independence of people with sight loss.

Under improving the eye health of the people of the UK, the five-year aim is to raise awareness and understanding of eye health among the public, including those people most at risk of eye disease. There is also an ambition to raise awareness of eye health among health and social care practitioners and to ensure the early detection of sight loss and prevention where possible.

Under eliminating avoidable sight loss the five-year aim includes improvement in the coordination, integration, reach and effectiveness of eye health services.

All countries in the UK have developed plans to implement the strategy. These are available at: vision2020uk.org.uk/visionstrategy.

Our report provides a strong economic rationale for the planned activities.

Appendix 2 – Measuring the "burden of disease"

The Access Economics study is based on the disability-adjusted life years (DALY) approach to assessing the burden of disease, mainly because it is the approach used by the World Health Organisation. Using this methodology, Access Economics arrived at an estimate of 189,039 years of healthy life lost due to sight loss in 2008. This figure was then multiplied by the value of a statistical life year (VSLY) that had been set at £76,866 in 2008 prices and is based on Government figures (6).

The total cost of years of healthy life lost due to disability was **£14.5 billion**. A further **£1 billion** was added to this total to reflect the years of life lost due to premature death. In 2008, the total burden of disease due to sight loss in the UK was thus estimated to have reached approximately **£15.5 billion**.

When looking at a breakdown of these costs by disease area, it is striking to see that AMD and refractive error generate the greatest burden, with approximately 59,000 healthy life years lost due to AMD and 55,000 due to refractive error (31 and 29 per cent of the total respectively). This is a stark reminder that although people who live with sight loss through refractive error rarely reach the level where they would be eligible to be registered as partially sighted or blind, refractive error still contributes significantly to the overall burden of disease. This is due to the large number of people affected (almost a million people). The figures also emphasise the need for ongoing research into treatments for age-related macular degeneration. While wet AMD is becoming a treatable condition, dry AMD continues to lead to irreversible sight loss that causes a high burden of disease.

Appendix 3 - Endnotes

(1) Conway, L. et al, "Older people and eye tests", RNIB, 2007.

(2) Brody BL et al, "Depression, visual acuity, comorbidity, and disability associated with age-related macular degeneration", in Ophthalmology 2001: 108, pp.1893-900. Hamlin, D., A. Lightstone, and J. Wood, "Associated psychological and emotional aspects of sight loss", in Optometry, February 2002, pp. 43-45. On-line: optometry.co.uk . Vu, HTV et al, "Impact of Unilateral and Bilateral Vision Loss on Quality of Life", in British Journal of Ophthalmology 2005: 89, pp. 360-363.

(3) S. Winyard (2004), "The cost of sight loss in the UK".

(4) Access Economics, "The economic impact of visual impairment in the UK adult population" (2009); and D. Minassian, D. and A. Reidy, "Future sight loss in the decade 2010 to 2020" (2009).

(5) UK Vision Strategy Implementation Plan for England 2009-2014; UK Vision Strategy Implementation Plan for Northern Ireland 2009-2013; UK Vision Strategy, Scotland – Setting the direction for eye health and sight loss services, 2009.

(6) Access Economics report, p.111–112. Reference: Mason, H, Jones-Lee M, Donaldson C, 2008, "Modelling the monetary value of a QALY: A new approach based on UK data", Health Economics. In print, published online 14 October 2008.

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