The team at Moorfields Eye Hospital NHS Foundation Trust discuss the main causes of sight loss and low vision in adults. With more than half of new ophthalmology outpatients in England aged 60 years and over, the team tell us more about these eye conditions and what practical advice and support is available.

An illuminated sleep mask providing a non-invasive and low cost treatment for diabetic retinopathy at any stage of the disease, reducing the need for the more invasive and expensive interventions.
Welcome to our latest issue of Innov-age magazine focusing on eye health and sight. Almost 2 million people in the UK are living with sight loss and losing sight becomes more likely as we age.

More than half of new ophthalmology outpatients in England are aged 60 years or above and as the team at the Moorfields Eye Hospital discuss in their lead article, the main causes of sight loss and low vision in adults are cataract, age related macular degeneration (AMD), glaucoma, and diabetic retinopathy.

This issue also shows there is a link between sight loss and overall health. Furthermore, unsurprisingly sight loss is also linked to reduced psychological wellbeing, such as depression, anxiety and social isolation, with around 35% of older people with sight loss also living with some form of depression.

We also learn that people with sight loss are almost twice as likely to fall and be injured than sighted people, therefore they are often less mobile, less active and socially isolated due to fear of falling. Non-activity, as we saw in issue 9, leads to loss of muscle function and a more sedentary lifestyle can reduce our life expectancy. It cannot be underestimated therefore how important it is to look after our eye health and try to prevent deteriorating sight.

Practical advice and support is available and we learn from this issue how regular eye tests can help spot problems early on. We also learn how especially important this is for people with dementia as the symptoms of dementia may mask the symptoms of sight loss. It is thought at least 123,000 older people have both dementia and sight loss and our article exploring the overall care and support needs of people with both dementia and sight loss describes how these complex needs should be considered and managed together, rather than separately.

There is lots of further advice and guidance available and we have also tried to highlight some of the available resources. In the meantime I’m off for regular eye test I keep putting off!

Jackie Oldham
Honorary Director, Edward Centre for Healthcare Management Research
Contents

page

2  Editorial Foreword

4  Insight – Living with Sight Loss

8  Care and Support Needs of People with Dementia and Sight Loss

11 RNIB Evidence and Service Impact Team

12 News...

14 Sight for Sore Eyes – Noctura 400 Sleep Mask

17 Cochrane Corner – Review

18 Spotlight on...

20 Autumn Issue – Hearing

Edward Centre for Healthcare Management Research, Citylabs, Nelson Street, Manchester, M13 9NQ
www.innov-age.org
info@innov-age.org
0161 276 4473

To subscribe for free, contribute or for any enquires please contact the team or visit our website we look forward to hearing from you.

Editorial Team
Jackie Oldham, Alexis Ward, Richard Deed, Peter Bullock, Hanjie Huang.

 Contributors

Innov-age® is the official magazine of the Edward Centre for Healthcare Management Research, part of the Edward Healthcare group of companies.

© 2015 Edward Centre for Healthcare Management Research, part of the Edward Healthcare group of companies.

The contents of this publication are protected by copyright. All rights reserved. No part of this publication may be reproduced, stored in any retrieval system or transmitted in any way for any means without the written permission of the publisher. The views expressed in this publication are not necessarily those of the publisher or editorial team. While the publisher and editorial team have taken every care with regard to accuracy of content they cannot be held responsible for any errors or omissions contained therein.

Designed and printed by Corner House Design and Print Limited
0161 777 6000 www.cornerhousedesign.co.uk
ISSN 2052-5763 (Print)
Living with Sight Loss

Moorfields Eye Hospital NHS Foundation Trust Team

The term "sight loss" includes mild to moderate sight impairment (visual morbidity) through to certifiable sight loss, which can be attributable to a broad range of causes and contributory factors. The term low vision is used when a person’s vision cannot be fully corrected by regular glasses, contact lenses or medical or surgical treatment so that everyday activities such as reading, watching TV, cooking, driving etc. are difficult to do.

The main causes of sight loss and low vision in adults in the UK are age related macular degeneration (AMD), cataract, glaucoma, diabetic retinopathy (Access Economics, 2009; EpiVision, Minassian and Reidy, 2009). The main cause of mild to moderate visual impairment is uncorrected refractive error. All of these are associated with increasing age, particularly in those aged 65 years and over.

Many of the diseases associated with premature mortality (e.g. hypertension, diabetes, cardiovascular disease), are also risk factors for sight impairing conditions (Tomany, et al., 2004; Seddon, et al., 2006; Cheung, et al., 2008; O’Mahoney, Wong and Ray, 2008), so any generic public health interventions (e.g. for smoking cessation, diet, obesity, physical activity), designed to modify risk of these will also have a beneficial impact on eye health and prevention of sight loss.

Cataract surgery effectively restores quality of vision and is most commonly performed in people over the age of 70 years. Uncorrected refractive error is readily correctable through refraction and dispensing of glasses. Whilst interventions are available for some forms of AMD, glaucoma and diabetic retinopathy, these are chronic conditions, and treatment is aimed at managing an acute episode, or slowing progression of the condition to prevent sight impairment, low vision or certifiable sight loss.

Each of these conditions causes different types of effects in a person’s vision and the visual acuity of people with low vision can vary widely. The types of problems experienced depend
on the position and degree of visual field loss that has occurred. For example:

- Loss of visual field in only one eye will be compensated for by a full visual field in the unaffected eye.
- Loss of areas of the binocular visual field (both eyes) will have a greater impact.
- Loss of peripheral vision will affect mobility, particularly if an inferior field defect is involved.
- If loss involves the central field of vision then this will pose problems for near vision tasks, reading and recognising faces.

Sight impairment and low vision, irrespective of its cause, can be associated with diminished quality of life and functional activities of living, including depression, anxiety and emotional distress (Tinetti, et al., 1995; Thomas Pocklington Trust, 2005; Knudtson, et al., 2005; Mitchell and Bradley, 2006; Evans, Fletcher and Wormald, 2007; Zhang, Huang, Dong, et al., 2010; Bullard et al., 2013). When both eyes are affected, the significant and irreversible loss of vision (particularly loss of central vision) experienced by affected persons has been shown to result in despondency, inability to care for self or others, and a state of disutility, which is equivalent to that experienced in coronary heart disease and stroke (Chakravarthy and Stevenson, 2005). Sight loss is also associated with Charles Bonnet syndrome which is characterized by complex visual hallucinations in otherwise psychologically normal people. Patients usually possess insight into the unreality of their visual experiences, which are commonly pleasant but may sometimes cause distress (Jacob, et al., 2004).

**What is Certification of Sight Impairment?**

Certification of sight impairment provides clinical confirmation of the level of sight loss that is present, and a reliable route for someone to receive appropriate support and services through registration as a sight impaired person. Registration is voluntary and confidential. Local authorities have a duty to keep a register of people in the area who are blind or partially sighted.

**Support Services**

Visual loss has a huge psychological as well as practical impact. Many people affected by sight loss will experience a bereavement reaction and they will feel shock, fear and anger. In order to provide timely appropriate support and information for visually impaired patients, Moorfields Eye Hospital launched a Support Service in 2012. The team consists of Ophthalmic Nurse Counsellors, Eye Clinic Liaison Officers, and a Certificate of Visual Impairment Team. The service offers counselling,

...continued on next page
emotional and psychological support, practical advice and signposting to specialist information about eye conditions, support groups and other relevant organisations. The service is available for all patients attending the hospital and their relatives, at time of diagnosis, throughout treatment and during follow-up. This is a confidential face-to-face service, offering short term therapy usually in blocks of six sessions. The team is accessible through a direct contact number.

The Role of the Ophthalmic Nurse Counsellor
The Ophthalmic Nurse Counsellors provide patients with an opportunity to explore their thoughts and feelings about their eye problems, and coping with anxiety and depression. They also liaise with other agencies such as GPs, and mental health services for patients who live out of area and those who have complex needs.

A service review one year after its introduction found that it was addressing a significant need for patients with sight impairment (Thombs and de Board, 2014). Common reasons for referral to the Ophthalmic Nurse Counsellors included depression, anxiety, and patients reporting suicidal feelings. Having to stop driving and the implications of this was a further trigger for seeing a counsellor. Patients frequently reported experiencing issues related to work, loss of independence, losing social networks, struggling to maintain relationships, and isolation. Patients often spoke of feelings of despair and hopelessness, and anger was common particularly in those patients with conditions for which there is no medical treatment, e.g. for some genetic conditions.

Role of the Eye Care Liaison Officer (ECLO)
The Eye Care Liaison Officer offers advice and information about formal registration of sight impairment, but their key role is to provide a bridge for patients with sight loss and low vision to services outside the hospital. Ideally the ECLO should be able to access a calm space away from the clinic where patients can consider the implications of registration, managing their sight loss, and discuss any concerns. The ECLO will have a network of contacts in the local area and with national organisations that provide support to people with sight loss in their daily lives.

Support available for sight impaired older people
The primary source of support for people living with sight loss is the social services. The social services are also able to assess a person’s home for environmental aids – such as lighting and stair rails. Depending on a person’s age and physical condition adaptations
such as a level access shower or stair lift may be appropriate. There may be a charge for these items.

Most local authorities employ specially trained Rehabilitation Officers who provide training and advice to people with sight loss. This may include mobility training using a white cane or kitchen skills. Other local authorities employ agencies to provide this service.

In addition to statutory services there are many voluntary organisations that offer support, both nationally and locally. The largest of these is the Royal National Institute of Blind People (RNIB) which operates a helpline for people living with sight loss.

Local voluntary organisations range from county-wide associations to small groups focussing on one local borough. There are also organisations for specific eye conditions such as the Macular Society.

Further information and support
RNIB: 0303 123 9999
http://www.rnib.org.uk/
Macular Society: 0300 3030 111
http://www.macularsociety.org/
Diabetes UK: 0345 123 2399
https://www.diabetes.org.uk/
Age UK: 0800 169 65 65
www.ageuk.org.uk/
International Glaucoma Association: 01233 64 81 70
www.glaucoma-association.com/

References
Access Economics (2009) Future Sight Loss UK 1: The economic impact of partial sight and blindness in the UK adult population, RNIB.
Care and support needs of people with dementia and sight loss

Dr Michelle Heward is a Post-Doctoral Research Fellow at Bournemouth University Dementia Institute. She has experience of using qualitative methods and has worked on several projects to improve the lives of people affected by dementia. Her research interests include community inclusion, home safety, support and service provision, public engagement and impact, and the views and experiences of people affected by dementia.

Dr Samuel Nyman is a Senior Lecturer in Psychology at Bournemouth University and a core member of Bournemouth University Dementia Institute. He brings experience to this project from previous work on the emotional support needs of people with sight loss. His current research is investigating how we might better promote physical activity and prevent falls among older people with dementia and their carers.

Professor Anthea Innes is the Head of Bournemouth University’s Dementia Institute. As a social scientist she brings a distinct approach to understanding dementia and working with people with dementia. Her research interests include raising awareness through public engagement, creative approaches to supporting people with dementia, rural service provision, technology, care environments, the views and experiences of people with dementia and their family members, and diagnostic and post-diagnostic support.

The world’s population is ageing and will continue to do so (World Health Organization, 2002). This means that more and more people will be diagnosed with age-related conditions such as dementia and sight loss. Previous research does not recognise the care and support needs of people who have both dementia and sight loss, noting only one empirical study (Lawrence, et al., 2009). Therefore, this study explores the care and support needs of people with both dementia and sight loss. Twenty-six semi-structured interviews were conducted across three sites covering the North, South, and Midlands of the UK. Each interview focused on the lived experience of having dementia and sight loss and were analysed thematically. Here two case studies are presented; Maisie* and Bill*, drawn from these interviews, to demonstrate some of the findings.

Frustration at increasing dependency

Case study – Maisie*
Maisie is 78 years old. She has a diagnosis of macular degeneration and is registered blind. She also has a dementia diagnosis of Alzheimer’s disease. She lives with her husband Derek in a socially rented flat (on the top (2nd) floor). This is on the outskirts of a large city, ten minutes’ walk from a shopping centre where they are able to purchase most things they need (i.e. groceries, clothes etc.). They have lived in this flat for the last 18 years. They do not currently receive paid care at home nor have they had any adaptations made to their home.
Maisie has minimal vision. Her experience of receiving a sight loss diagnosis was traumatic as she was told by a hospital doctor that she was going blind, and when she asked what would happen the hospital doctor said, ‘academic’, and walked away. This left her bewildered and she quickly became depressed. Maisie also has Alzheimer’s disease and for the past year her short-term memory has been getting worse. For example, she will ask her husband, Derek, what he wants for dinner four times before she remembers. Also, she has had problems with their new cooker, meaning that Derek has to turn it on for her. Maisie’s increasing dependency on Derek for everyday things, like help turning on the cooker, is a source of frustration for both of them which has led to some disagreements. Maisie is struggling to remain independent and engaged in meaningful activities, and is frustrated at needing to accept help from others. Derek has taken on additional household tasks (such as cleaning), as his way of coping as Maisie becomes more dependent. He is less socially active than he used to be, as Maisie does not go out as much due to her arthritis. Maisie has stopped going to church and has since lost friends. This has resulted in Derek staying in more than he used to, to keep her company. Derek has concerns about his ability to continue providing care when Maisie’s condition deteriorates.

Maisie is struggling to remain independent and engaged in meaningful activities, and is frustrated at needing to accept help from others.

Support for those living alone

Case study – Bill*

Bill is 84 years old. He has a diagnosis of retinitis pigmentosa, and is registered partially sighted. He also has a dementia diagnosis of vascular dementia. He lives alone in a detached house in a rural area near a forest and has lived there for 25 years. He currently receives paid care from social services; this involves a carer visiting daily for 10 minutes to give him his medication. He has had no adaptations made to his home.

Bill demonstrates how isolating it can be for people that live alone with few family and friends close by. He is reliant on support from paid care workers. Bill is partially sighted and spends most of his time in his study writing letters to members of his family who live abroad. He enjoys reading and going for long walks, and has a keen interest in history. Bill used to drive but has given up now due to his eyesight deteriorating. He developed memory problems five years ago when he fell and hit his head. Since then he does not go out alone, and so does not make use of his free bus pass. Bill receives formal support from paid carers who help him to take his medication every day during a 10 minute visit (this was implemented after an overdose). Every week Bill pays a care worker to help him with his food shopping by driving him to the supermarket and walking round with him. He is knowledgeable about cooking and makes his own bread and eats lots

...continued on next page
of fruit and vegetables. However, his kitchen floor is dirty and there is ingrained dirt around the cooker. There is fresh food on the shelves, but also several flies in the kitchen. Bill has few friends that visit regularly, with the exception of a friend who drives him to church every Sunday. It is clear that Bill is reliant on the support he receives from others.

Both Maisie’s and Bill’s care needs are increased by the fact they have both dementia and sight loss, as well as their additional health conditions.

Benefits of an early and timely diagnosis

The benefits of an early and timely diagnosis are clear. For example: Maisie is receiving informal support from her family, friends and neighbours. This includes help with food shopping, doing housework, managing bills, and providing respite care. Maisie uses technology to support her with everyday tasks, for example sight loss aids such as a screen reader (large magnifier), talking clock and talking calendar. She is a keen reader and enjoys her talking books from the Royal National Institute of Blind People, and describes her screen reader as her ‘lifeline’ that enables her to continue reading. However she is concerned about what would happen if her screen reader was to break as she does not have the £2,000 it would cost to replace it. The fact that these items have been introduced to Maisie early after her diagnosis means that she is able to continue using them as her condition begins to deteriorate. This demonstrates the value of an early or timely diagnosis and appropriate signposting to services that are suitable for each person individually.

Introducing technology and support aids early after Maisie’s diagnosis has enabled her to continue to use them after her condition has deteriorated.

In summary, we recommend a greater focus on the overall care needs of people with dementia and sight loss, rather than each condition separately. An early and timely diagnosis, followed by appropriate support, will enable people with dementia and sight loss to continue to live independently, and for their carers to be able to support them to live as well as possible, for as long as possible.

*Names have been changed to maintain confidentiality.

References

Acknowledgements
We would like to thank the people with dementia and carers that took part in the interviews. We also thank the organisations that assisted us with finding participants to interview, and colleagues for conducting interviews with people with dementia and visual impairment: Michele Board (four interviews in the South), Jennifer Bray (the interviews in Midlands), and Karen Croucher and Mark Bevan (the interviews in the North). We thank the wider project team (Simon Evans, Anna Clarke, Julie Barrett, Sarah Buchanan and the interviewers named above) and advisory group (Caroline Glendinning, Vivien Lyons, Amanda Reeves, and Peter Rush) for their critical comment and input throughout the project, and those that attended a project event to provide their comment on our findings. This work was supported by the National Institute for Health Research, School for Social Care Research under Grant T976/T11-084/UYKC. The views expressed are those of the authors and not necessarily those of the NIHR School for Social Care Research or the Department of Health/NIHR. Ethical approval was obtained from the Social Care Research Ethics Committee (Ref: 12/IEC08/0040) prior to data collection.
RNIB Older people Evidence-based review

RNIB publish a suite of evidence-based reviews on key demographic groups – one of which is older people.

The review looks at the experiences of older blind and partially sighted people, and includes a profile of the group, detailing the numbers of people affected and the leading causes of sight loss amongst older people, as well as statistics on areas such as health, well-being, isolation and income. The review also includes information about the main services and support available for this group, the key professionals that work with them and the policies that govern and impact upon their lives. The review closes with a commentary on what the evidence tells us, which outlines the key areas of focus over the coming years and a set of recommendations.

The suite of Evidence-based reviews is available at: www.rnib.org.uk/knowledge-and-research-hub-research-reports/evidence-based-reviews

Join the Later Life and Sight Loss Network

RNIB have recently set up a Later Life and Sight Loss Network for professionals working with older people. Whether you’re a rehab worker, sight loss advisor, care worker, or simply interested in research and service innovation on sight loss in later life, this network may be for you.

It’s free to join the network, and by joining you will have access to:
• a regular e-newsletter containing the latest research, policy, events and products to help you in your role
• access to an email forum - the group will connect network members together to share ideas, articles and findings online
• professional development events to bring together those working with older people to hear about emerging themes, publications and debate ideas
• access to a web resource that brings together factsheets, guidance and information that can help you in your role.

To join the network please email esiolderpeople@rnib.org.uk with the subject line: ‘Join network’ and include your name, job title and organisation in the email.
Blood test could identify the first signs of Alzheimer’s disease and dementia 10 years early

Scientists at Kings College London and the Medical Research Council have found that a protein detected in blood is significantly lower in people who go on to develop Mild Cognitive Impairment.

The discovery was made after taking samples from 100 sets of twins then following their progress over 10 years. As the protein declined, so did their mental abilities. The study, published in Translational Psychiatry, was the largest of its kind to date, measured over 1,000 proteins in the blood to find our which were the most effective for predicting the onset of mental difficulties.

There is currently no medication for treating or preventing dementia, but researchers are hopeful that there will be in the future, and an early test could stop the development of the condition. Those at risk could also choose to adopt lifestyle changes, as current evidence also suggests that exercise, eating healthily and stimulating the brain can help prevent the onset of dementia.

To find out more please visit: www.nature.com/tp/index.html

The National Care Forum Annual Workforce Survey

The National Care Forum (NCF) annual workforce survey has found more than half of the workforce in residential, homecare and day care settings are aged over 45.

Only 11.5% of the workforce are aged under 25, a number that has fallen for the fourth consecutive year. The only setting which shows a slight increase in younger staff is Supported Living. However, leaver analysis shows a larger number of staff have remained in service for more than 2 years with 1 in 5 leavers having worked for the organisation for more than 5 years.

The NCF Personnel Statistics Report 2015 is one of the largest annual workforce surveys in the care sector, draws on data from 60 member organisations covering some 64,896 employees.

Des Kelly OBE, NCF Executive Director advises “Although staff retention has shown some improvement, turnover rates remain high and we still see more than half of staff (58.8%) leaving in the first 3 years in post and almost a third (30.7%) leaving in their first year and we still appear to know far too little about where they go and why.”

‘Personal reasons’ remains the top reason given for leaving a post; ‘career development’ has risen to second place with significant increases over recent years and ‘competition from other employers’ has more than doubled in recent years. Perhaps another indication of an ageing workforce ‘retirement’ and ‘ill health’ now feature in the top 6 reasons for leaving.

One of the most worrying findings is the seemingly shrinking proportion of younger people in the workforce. It is vital that we have strategies to attract young people to work in care – they are also our future managers.

Find out more about the National Care Forum please visit: www.nationalcareforum.org.uk
NHS Innovation Accelerator Programme

The NHS Innovation Accelerator (NIA) is a fellowship programme which is being delivered collaboratively by NHS England, UCL Partners, The Health Foundation and with the Academic Health Science Networks (AHSNs) to assist proven innovations to be adopted faster and more systematically through the NHS.

The call for applications was launched in January 2015 and the first cohort of 17 Fellows have been appointed, identified to receive national support to roll out their technologies, processes and models of care to patients, hospitals and GP practices throughout England.

One of the 17 chosen was Piers Kotting, from University College London, who has been working to increase the numbers of patients taking part in dementia research. One of the big difficulties researchers face today is recruiting participants for their studies. At the same time, many people are looking for studies to contribute to and take part in, but do not know where to find out about them.

Join Dementia Research allows people to register their interest in participating in dementia research and be matched to suitable studies. This innovation benefits people affected by dementia, and researchers by increasing the speed and reducing the cost of research. It has the potential to drive evidence-based improvements in prevention, diagnosis and treatment of dementia into practice more quickly – and to be generalised to other conditions.

One of his ambitions through the NIA programme is to recruit 100,000 people to register on Join Dementia Research.

Find out more please visit: www.joindementiaresearch.nihr.ac.uk

Upcoming Events...

Health and Care Innovation Expo 2015  2nd – 3rd September 2015
Manchester Health Secretary Jeremy Hunt will tell Expo 2015 how technology is going to change the face of health care over the next decade. The Minister’s keynote address hosted once again by NHS England it will unite 5000 people a day from health and care, the voluntary sector, local government, and industry.  www.england.nhs.uk/expo/

Each day of the week focuses on a different theme encouraging people to improve and protect their vision and eye health including: You and Your Eye Health; Nutrition and the Eye; Technology and UV Protection.  www.visionmatters.org.uk/

Manchester Royal Eye Hospital Ophthalmic Nursing Conference  21st October 2015

Care England 2015 Conference & Exhibition  12th November 2015
The Care England conference provides an opportunity for care providers to hear the views of leading sector figures from government, regulation and commissioning on what is new and what this means for the social care sector.  www.careengland.org.uk/care-england-2015-conference-exhibition
Sight for Sore Eyes – Noctura 400 Sleep Mask is the first non-invasive and low cost treatment for Diabetic Retinopathy

The Noctura 400 is an illuminated sleep mask with the potential to transform the treatment of diabetic retinopathy

Twelve years ago, Richard Kirk became fascinated by a small piece of electroluminescent material. It was made of organic light-emitting diodes (OLEDs). OLEDs emit light when an electric current is passed through organic molecules or polymers. They have a conductive layer as thin as human hair, which can be printed on very thin substrates, which makes them flexible and adaptable. At the time Richard was an artist and despite having no scientific background he instantly recognised the potential of the technology. He founded, PolyPhotonix (www.polyphotonix.com/) in partnership with the Centre for Process Innovation (www.uk-cpi.com/) (CPI), and with support from the Innovate UK High Value Manufacturing Catapult (https://hvm.catapult.org.uk/). The company is now on the verge of revolutionising treatment for degenerative sight-threatening conditions caused by age and diabetes.

Type 2 diabetes usually appears in middle-aged or older people. In 2001, one in five people over the age of 85 and around one in four people in care homes had diabetes, which is a higher prevalence than in the comparable general population. These figures are thought to have risen since 2010. In England, approximately 15.2% of men and 12.2% of women between the ages of 65-74, and 15.9% of men and 13.2% of women over the age of 75 have diabetes (Diabetes UK, 2012).

Diabetic Retinopathy
The retina uses more oxygen per unit mass than any other tissue in the body. This is due to the fact that photoreceptors have a phenomenally high metabolic rate. That demand for oxygen becomes even greater at night, rising by around 40% as rod photoreceptors dark-adapt. Under normal physiologic circumstances, this isn’t a problem; the additional demand for oxygen is met by increased blood flow through the retinal vasculature.

There is a growing body of research which has found that diseases such as diabetic retinopathy (DR) and diabetic macular edema (DME) are driven, at least in part, by retinal hypoxia and the body’s natural response to this is to promote new vascular growth to compensate. Unfortunately these new vessels are weak, suffer from leakage of fluid and the resulting retinopathy and oedema can cause serious visual loss.
Current Treatments
Diabetic Retinopathy and Diabetic Maculopathy are serious complications of diabetes which can lead to complete loss of vision. Most sight loss due to diabetes is preventable if treatment is given early.

Today, treatment is only available when the DME becomes clinically significant or shows progression to the fovea (a small pit in the center of the macula, the eye’s area of sharpest vision). Laser photocoagulation treatment is the current standard of care when the DME becomes clinically significant. Although laser treatment reduces the risk of moderate visual loss by 50%, it is not effective in restoring best corrected visual acuity (BCVA) and has significant side effects that impact on the quality of life of patients. Another treatment option is inhibitors of Vascular Endothelial Growth Factor (anti-VEGF) which are injected into the eye. These treatments are costly, invasive, uncomfortable for the patient and cause significant burden to patients, their care-givers and the healthcare system making them treatments of last resort.

An Alternative Treatment – Sleep Mask
Noctura 400 is a Class IIa medical device with CE accreditation that has been developed by PolyPhotonix, a British research and technology company specialising in materials science and medical device development.

The Noctura 400, is an eye mask which provides a non-invasive and low cost treatment for diabetic retinopathy at any stage of the disease, reducing the need for the more invasive and expensive interventions mentioned earlier.

The mask works by directing low intensity light of a specific wavelength into the rod cells during sleep, restoring the rods to their daytime state, reducing the need for oxygen, avoiding the hypoxic responses and therefore preventing the progression of retinopathy.

The Noctura 400 Sleep Mask consists of an organic light-emitting diode (OLED) housed inside a soft cushioned fabric mask, designed to be worn at night, to deliver a precise dose of light therapy during a patient’s normal hours of sleep. The mask is programmed to administer the correct dose of light each night as part of a continuing therapy. It has a compliance monitoring system that senses and records how long the light mask is worn, and provides nightly data on the amount of therapy being administered (figure 1). At the end of the allocated period (usually 12 weeks), the mask is returned for analysis and a replacement mask is provided. The collected compliance data allows the clinician to compare how regularly the mask has been worn with changes in vision and the condition of the disease.

...continued on next page
The Economics
Diabetes itself is a huge economic burden on healthcare systems around the world. In the UK, diabetes costs the NHS more than £10 billion each year, 10% of the total healthcare budget, and a large proportion of that cost is the treatment of ocular complications caused by diabetes. That situation is expected to get worse as the prevalence of diabetes rises, potentially by as much as 50% percent by 2030 in the UK, with obvious socioeconomic implications. Anything that could reduce the number of hospital visits a patient will make a huge difference to patients’ lives and healthcare costs.

Clinical Validation
Developing the sleep mask has involved a great number of collaborations across the UK. The Northern Design Centre of Northumbria University helped to determine the shape and appearance of the mask, and work with the School of Medicine, Pharmacy and Health at Durham University, provided valuable insight into patient issues. A close relationship between PolyPhotonix and the Eye and Vision Department at Liverpool University established the safest wavelengths and intensity of light to use, and a clinical trial has been completed demonstrating the safety and acceptability of the treatment.

Results from these trials indicate that wearing the mask reduces progression of retinopathy, including diabetic macular oedema (DME), and can improve visual acuity. Data from these trials has proved evidence for the CE certification for the Noctura 400 sleep mask (figure 2). This is due to be published later this year.

It is anticipated that the treatment will be adopted by the NHS in parallel with current treatments. However it should also be considered for use at an early stage of the diabetic eye treatment pathway. The treatment is also available privately through The Outside Clinic, the UK’s largest domiciliary eye care specialists and some independent optometrists, patients can pay for access to the eye mask and integrate it into their own eye care pathway.

Figure 2: shows OCT scans from a patient before and after 6 months use of Noctura 400.

Figure 3 & 4: Subject with Mask and PolyPhotonix Mask and Drawings.

References:
We know that vision often decreases as we age and this can have an effect on independence, with difficulties in reading, ability to drive, mobility and orientation in environments. Avoidance of physical activity and consequent reduced functional capacity is common in older people with visual impairment and an important risk factor for falls. There are a number of interventions that are designed to assist with these issues.

**Orientation and mobility training** teaches people to use their remaining vision and other senses to get around and can include the use of walking sticks and other visual and optical aids. Unfortunately there is very little evidence from research regarding which type of training is better for people with low vision.

Often people make adaptations and modifications to their physical environment (usually their home) and may use adaptive strategies to enhance changes in their behaviour when negotiating and interacting with their environment. There is no evidence to enable any conclusions to be reached about either of these types of interventions when advised and delivered by health and social care professionals.

**Vision screening tests for the issue or renewal of a driver’s license** are common in many countries. However there is no evidence to demonstrate the impact of vision screening on the prevention of older driver-related crashes, but it is probably good practice to do so given the importance of good vision for safe driving.

There are many interventions that attempt to improve speed of reading in people with low vision.

Reading speed is higher with stand-mounted electronic devices or electronic devices with the camera mounted in a 'mouse' than with optical magnifiers such as hand-held magnifiers or microscopic lenses. However this evidence is only of moderate or low-quality.

Other evidence suggests that reading speed with stand-based electronic devices or optical devices is faster than with head-mounted electronic devices.

One small study suggested that there is no difference between different types of magnifiers such as diffractive spectacle-mounted magnifiers, refractive or aplanatic magnifiers.

Evidence suggests that overlay coloured filters are probably no better and are possibly worse than a clear filter however these results are based on a small study involving only 10 participants.

The reading speed of people wearing custom or standard prism spectacles in people with age-related macular degeneration is no different from people wearing normal reading spectacles. This was based on one study involving 243 people.

**References:**


What is your current position and what was your career path that took you there?

Eye Clinic Liaison Officer and Manager of the Certificates of Vision Impairment Team at Moorfields Eye Hospital. I qualified as a Rehabilitation Worker (Visual Impairment) in 1996 and worked with blind and partially sighted people for a local authority until 2012 before moving to Moorfields.

What challenges do you face in your current position and which has been the greatest one?

The sheer volume of patients and clinics here at Moorfields create many challenges. It means that we are not embedded in a single clinic and need to constantly promote our service throughout the hospital. We see patients from all over the country – not just one location – so we have to network with dozens of local authorities and voluntary organisations.

In your opinion, what are the top 3 issues affecting the care of older people?

- The decline in the numbers of trained rehabilitation workers to provide training and support to older visually impaired people in their own homes.
- The limitation of resources – in the past 20 years I have seen some homecare packages reduced to 15 minute slots.
- The link between health and social care services is vital. There needs to be an ever closer relationship.

What changes in elderly care do you anticipate in the next few years?

Technology is making a huge difference to visually impaired people – there are many older people who are eager to embrace new developments but others who feel the technological revolution has passed them by. As the current population ages I expect more older people will be used to using the latest technology and will be able to take advantage of things such as smartphone apps and talking computers.

If you hadn’t become an Eye Clinic Liaison Officer, what might you have done?

My original training was in the theatre – the production side rather than acting. So maybe I would have continued with that.
What experience has influenced your career the most?

I joined a local group of visually impaired people when I was in my twenties. I had never met any visually impaired people before and as I got to know the members of the group I realised that, given the right support, blind and partially sighted people can lead lives just like anyone else – seems obvious but it was a revelation to me!

What advice would you give to someone contemplating following in your footsteps?

Get involved with some voluntary groups of visually impaired people and get to know some blind and partially sighted people on a personal level.

Where do you go for advice and information?

You can often be isolated as an Eye Clinic Liaison Officer so I try to attend regular meetings of visual impairment professionals. I still have a good network of colleagues from my days as a rehabilitation worker and there are many organisations providing support to blind and partially sighted people who are happy to give advice and information.

Who would you most like to work with?

I am just excited to be working at Moorfields – there are so many talented people here.

What do you enjoy doing when you are not working?

I have been involved with the Metro sports and social club for blind and partially sighted people for nearly 25 years. In the past I captained the England Blind Cricket team and played all over the world but these days I turn out for Metro’s second team!

What do you do in a typical working day?

We operate a drop-in service at City Road. We see patients from all the clinics that are running during the day – some of them will be having a Certificate of Vision Impairment completed on their behalf others will have specific queries concerning living with sight loss. A typical working day involves listening to patients’ concerns, discussing agencies that provide support and making referrals. The time spent with a patient will vary considerably depending on their needs. For some patients it is a simple process of sign-posting, but with others it is much more complicated.

If you were stranded on a desert Island what would be your one luxury?

A cricket net and bowling machine.
In our next quarterly issue of Innov-age we will be looking at Hearing and Older People. Hearing loss, like sight loss, becomes increasingly likely in later life. This can lead to difficulties with communication which can cause frustration, low self-esteem, and isolation. Age-related damage to the cochlea is the main cause of hearing loss and due to the ageing population of the UK, there will be an estimated 14.5 million people with hearing loss by 2031. The Innov-age team will be summarising research around this topic and sharing their knowledge and experiences of other important eldercare issues...