

Eye Health

Executive Summary

There are an estimated 7,600 people living with sight loss in North Somerset, far more than the 1,145 registered. With age acknowledged as a major risk factor for sight loss, the higher than average proportion of older people in North Somerset combined with an ageing society, mean the number of people living with sight loss is likely to increase. It is estimated there will be 13,600 people living with sight loss in the area by 2030. Other risk factors for poor eye health include ethnicity, smoking, deprivation and obesity. The latter of these could place huge demand on health services if obesity continues to rise at the current rate. Sight loss is also associated with a number of co-morbidities, for example, stroke, neurological conditions, learning disabilities, dementia, falls and depression. Poorer health outcomes are often seen in people who are affected by these conditions and are visually impaired compared to those who have the condition but are not visually impaired. Therefore, avoidable sight loss, ensuring rapid diagnosis, appropriate and timely treatment and suitable support is vital.

The four main eye conditions in the UK are: age-macular degeneration (AMD), glaucoma, cataracts and diabetic eye disease. AMD is the leading cause of certifiable visual loss. In 2012/13, 47% of new CVIs in North Somerset were attributed to AMD in people aged 65 years or over. The total number of people with AMD in North Somerset is estimated to be more than 2,000. Glaucoma is an asymptomatic disease (in its early stages) that damages the optic nerve and can lead to blindness. Similarly to AMD, the actual number of people with glaucoma is estimated to be much higher than the number registered. Current models suggest there could be as many as 2,300 glaucoma cases in North Somerset, with a further 8,000 suspects and 4,400 people with ocular hypertension (OHT), which puts people at increased risk of developing glaucoma. Cataracts comprise the majority (60%) of all ophthalmic inpatient admissions for North Somerset residents. Estimates suggest there could be almost 2,500 people living with cataracts and requiring surgical intervention. Diabetic retinopathy is a complication of diabetes and is one of the leading causes of blindness in working age people. Diabetes is predicted to increase in the future, having an important impact of eye health service provision and highlighting the

importance of diabetic retinopathy screening. In 2011/12, 87.4% of eligible North Somerset patients were invited to and attended a retinal screening appointment.

Although incidence of visual impairment in children is low, the impact of such a condition is high. The causes of vision impairment in childhood are generally different to the causes of sight loss in adults and therefore the needs of children should be addressed separately.

There are a range of service providers that provide eye services for North Somerset, including optometrists, ophthalmology departments/hospitals, GPs, community and voluntary sector and social care, who should all assess identify and address local need. Regular sight tests, for example, present an ideal opportunity to detect reduced vision and early signs of eye disease so that corrective action and treatment can be taken and therefore should be encouraged. However, in addition to hospital and optometric eye care services, there is a need to ensure the wider health needs are being addressed. This includes, for example, low vision support and rehabilitation services which are vital for enabling independence and improving quality of life, such as reducing injurious falls and depression.

Challenges for consideration:

- **Early detection is a priority.**
- **Increasing ageing population** on current service provision.
- **Increase in diabetes** on current service provision.
- **Equity of access.**
- **Good quality support services** for those who have visual impairment and the impact of visual impairment on their quality of life.
- **Mapping of eye health services** (community, hospital, voluntary etc) to see how they are being met and identify any gaps.
- **Link with other relevant strategies**, e.g. falls.

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The information presented in this chapter has been taken from the Bristol, North Somerset, Somerset and South Gloucestershire (BNSSSG) Eye Health Needs Assessment, which was completed in March 2015.

1. Why is this area important?

More than 1.8 million people are estimated to be living with sight loss in the UK and this is expected to double by 2050.¹ In North Somerset, there are an estimated 7,600 people living with sight loss. Often associated with increasing age, sight loss and conditions affecting the eye will increase as a result of the UK's ageing population. This has implications in terms of costs, not just the direct health care costs but also indirect costs such as unpaid care, adaptations and unemployment, not to mention the huge personal and social costs to the individual.

The four major sight conditions in the UK are:

- age-related macular degeneration (AMD);
- glaucoma;
- diabetic retinopathy;
- cataracts.

In addition, uncorrected refractive error also causes potentially registrable levels of visual impairment which can be improved with appropriate refractive correction (i.e. spectacles or contact lenses).

These conditions lead to visual impairment (i.e. partial sight or blindness) if undetected but could be prevented if diagnosed and managed appropriately. Evidence suggests that over 50 per cent of sight loss is due to preventable or treatable causes.² For definitions of these conditions, please read the *Glossary* (page 24).

There are a number of risk factors associated with sight loss, including age, gender, smoking, obesity and deprivation. Additionally, there are several co-morbidities which are important considerations in assessing the health needs of this population.

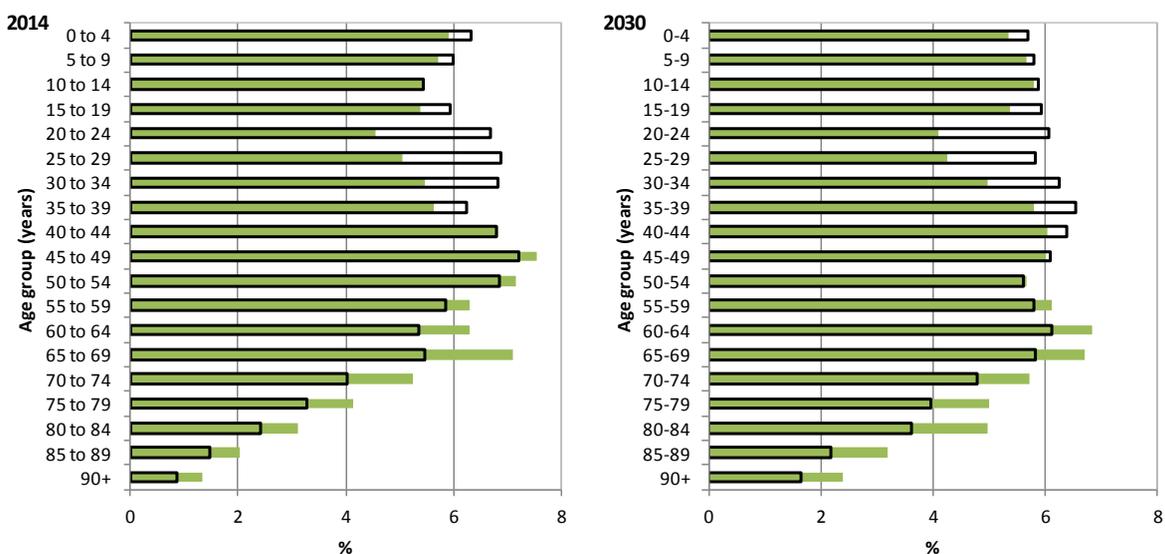
2. What are the needs of the population?

2.1 Risk factors and health determinants

2.1.1 Age

The prevalence of many eye diseases increases with age. The proportion of people aged over 60 in North Somerset in 2014 (29.1%) was higher than the England average (22.9%) and it is expected to rise to 34.8% by 2030. The proportion of people over 80 is expected to increase by over 50% to 10.6%, higher than the England average (7.5%).

Figure 1: Percentage population split by age in North Somerset (green bars) in a) 2014 and b) 2030 compared with England average (bold outlines)



Data source: Office for National Statistics (ONS)

2.1.2 Gender

Women have a longer life expectancy than men resulting in a higher number of women affected by certain eye health conditions than men, such as AMD.

2.1.3 Ethnicity

Ethnicity has been identified as a risk factor for eye health. People of African-Caribbean origin are at increased risk of developing glaucoma and the disease can occur 10-15 years earlier.^{3,4} People of South Asian origin are at an increased risk of diabetes and therefore, diabetic retinopathy, as well as early onset cataract.⁵ The risk of developing diabetic retinopathy is 35 percent higher than the risk in the white population.¹ In North

Somerset, 97.3% of the population are *White*, 1.2% are *Asian/Asian British*, 1% are *Mixed*, 0.3% are *Black/Black British* and 0.2% are defined as *Other ethnic group*.

2.1.4 Deprivation

Populations where there are multiple deprivation indicators have been shown to be more likely to present with eye disease later than others,⁶ thus increasing the risk of sight loss. In North Somerset, 10% of the population live in the 20% most deprived areas of England.

2.1.5 Lifestyle factors

Smoking is associated with an increased risk for AMD and cataracts; for example, smokers have double the risk of developing AMD compared to non-smokers and tend to develop it earlier. Obesity can increase the risk of developing several eye conditions, specifically diabetic retinopathy (due to an increase in developing type 2 diabetes), cataracts and dry AMD. Obesity also increases the speed of progression of AMD.^{7,8} In North Somerset, more than one in five adults are obese (22.7%) and 15% are smokers.

2.1.6 Co-morbidities

Sight loss is also associated with a number of other co-morbidities, for example stroke, neurological conditions, blood pressure, learning disabilities, dementia, falls and depression. Self care for other systemic conditions is also likely to be affected⁹ resulting in poorer health outcomes for these patients than those who are not visually impaired.

2.1.6.1 Learning disabilities

Visual impairments are more common among people with learning disabilities; adults with a learning disability are 10 times more likely to be blind or partially sighted,¹⁰ which can significantly impair their independence and quality of life.¹⁰ In North Somerset, 3.5% (40 people) of those registered as blind or partially sighted were recorded as having an additional disability. This is likely to be an underestimate of the true number, due to issues regarding validity of registration data (see *section 2.2*, page 7) as well as a lack of recognition of deteriorating sight and issues with communicating any deterioration.¹¹

Each year, GPs are supposed to offer regular health checks to people known to have a learning disability. In 2011/12, almost one third (28%) of eligible adults with a learning

disability did *not* receive their annual health check, which reduces the opportunity for early detection, diagnosis and treatment of visual impairments.

2.1.6.2 Dementia

The risk of dementia and sight loss both increase independently with age, with many affected by both conditions and numbers are expected to increase due to the ageing population. The impact of having both serious sight loss and dementia is considered more severe than the difficulties caused by either condition alone.¹² In addition, since sight loss symptoms may cause similar symptoms to progression of dementia (e.g. decrease in interest in reading/television, loss of confidence), the deterioration is often misdiagnosed as a worsening of dementia rather than sight loss. Approximately 1,600 people aged 65 and over are estimated to be living with dementia in North Somerset.

2.1.6.3 Falls

Older people with visual impairment are 1.7 times more likely to have a fall.¹³ In North Somerset, an estimated 8% of falls in people aged 65 and over occur in people with sight loss, which equates to 924 falls. Of these, almost half (437) are directly attributable to sight loss and 35 are classed as serious falls, i.e. requiring hospital treatment.

2.1.6.4 Depression

The risk of depression in older people is higher in those with visual impairment compared to the general population (13.5% vs. 4.6% respectively).¹⁴ Reducing avoidable sight loss therefore is important for reducing depression and improving well-being, whilst those people with visual impairment must have access to emotional support and rehabilitation services from the point of diagnosis onwards.¹⁵ Services should include social opportunities (e.g. swimming clubs, social drop in). Counselling services also offer an important opportunity to ensure those newly diagnosed have appropriate support.

2.1.6.5 Stroke

Almost 70% of people who experience strokes will also experience some form of vision dysfunction.¹⁶ However, existing evidence suggests 45% of stroke services provide no formal vision assessment for stroke patients.¹⁷ There are an estimated 1,147 people aged 65 and over in North Somerset who have had a stroke, meaning there may be 802 people who have experienced some form of vision dysfunction following a stroke.

2.2 Incidence and Prevalence of Partial Sight and Blindness

A Certification of Vision Impairment (CVI) formally certifies a person as either sight impaired (partially sighted) or severely sight impaired (blind). Each CVI form is completed by a consultant ophthalmologist in an eye clinic, with a copy being sent to the local social services department which provides a formal route to social care services, which offer registration and other relevant advice and support.¹⁸ However, people who are visually impaired often need support well before the time of registration. Registration is not automatic and not everybody that has been certified as having a visual impairment is recorded on a local authority register. Those that register become eligible for certain concessions. Registers of blind and partially sighted people are generally maintained by local authorities, however, in North Somerset, the local authority commission *Vision North Somerset* to maintain this information on their behalf.

In North Somerset, the number of new CVIs issued in 2011/12 was 86; of, these 43% were recorded as severely sight impaired CVIs. The rate per 100,000 was 23% higher than that recorded for 2010/11, though given the small numbers involved, year on year variation is likely. The number of registrations are shown in table 1. Approximately one fifth of registrations are in people aged 64 or over. Of the total number registered in 2014 (1,145), approximately 45 were newly registered in the previous 12 months.

Table 1: Number of people in North Somerset registered as blind or partially sighted (March 2008, 2011, 2014)

Year	All Cases		
	Total	Blind	Partial Sight
2008	1,305	670	635
2011	1,360	695	665
2014	1,145	570	575

Data source: Source: Health & Social Care Information Centre www.hscic.gov.uk

*All data are rounded to the nearest 5

There may be several explanations for the fall in the number of registrations in recent years, such as availability of treatment for wet AMD or issues with registration. Registration data are considered an underestimate of the actual number of those living with visual impairment as not all patients who qualify for registration choose to be registered. There are several reasons for this, including concerns about it adversely

affecting their ability to find work, the stigma of being labelled as visually impaired or the perception that there would be little benefit to the individual, for example, they may already access support services without it or registration is not seen as a formal gateway to social care and rehabilitation. Certification may also be overlooked when engaged in resolving the medical issues relating to treatment of eye disease.

Due to the known issues with this data, estimates have been generated for the number of people living with sight loss and projections for 2030 (table 2), which suggest that there may be six times more people than those registered. The estimated prevalence of sight loss therefore could be as high as 3.8%.

Table 2: Number of people estimated to be living with sight loss in North Somerset, 2011 and 2030

Year	All Cases		
	Total	Blind	Partial Sight
2011	7,600	940	6,660
2030	13,610	1,820	11,790

Data source: RNIB Sight Loss Data Tool Version 2 www.mib.org.uk

As previously highlighted, age is an important risk factor for visual impairment and therefore understanding future prevalence by age is vital (table 3).

Table 3: Current and future estimates of the number of people with visual impairment in North Somerset, by age group

		2014	2015	2020	2025	2030
People predicted to have a serious visual impairment	18-24 years	9	9	8	8	9
	25-34 years	14	14	15	15	14
	35-44 years	17	17	17	18	19
	45-54 years	20	20	20	18	18
	55-64 years	17	17	19	21	20
People predicted to have a moderate or serious visual impairment	65-74 years	1,439	1,473	1,529	1,501	1,680
	75 + years	2,740	2,802	3,360	4,166	4,662
People predicted to have registrable eye conditions	75 + years	1,414	1,446	1,734	2,150	2,406

Data sources: Projecting Older People Population Information (POPPI) and Projecting Adult Needs and Service Information (PANSI)

2.3 Cost of eye care

The costs of visual impairment are high and include not only the direct costs associated with healthcare (e.g. diagnosis and treatment), but also the indirect costs such as unpaid care, adaptations and unemployment.

Programme budgeting benchmarking data provide a breakdown of expenditure across 23 programmes of care and 12 care settings, such as outpatient and community for the year 2012/13. One of the programme budgeting categories is '*Problems of vision*'; data for North Somerset are presented in table 4. Around two-thirds of this expenditure was on secondary care and just over a quarter on primary care.

It should be noted that programme budgeting benchmarking data are collated by Area Teams and provided by those commissioning services; its validity and usefulness therefore is reliant on accurate coding and reporting and this should be borne in mind when interpreting the data.

Table 4: Expenditure on own population (total and £million per 100,000) on '*Problems of vision*', North Somerset, 2012/13

	Expenditure on own population (£million)	Expenditure (£million per 100,000 population)	Proportion (%) of total expenditure
North Somerset	10.5	4.98	2.9
National average	-	4.35	-

Data source: Programme budgeting data, NHS England, <http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/>

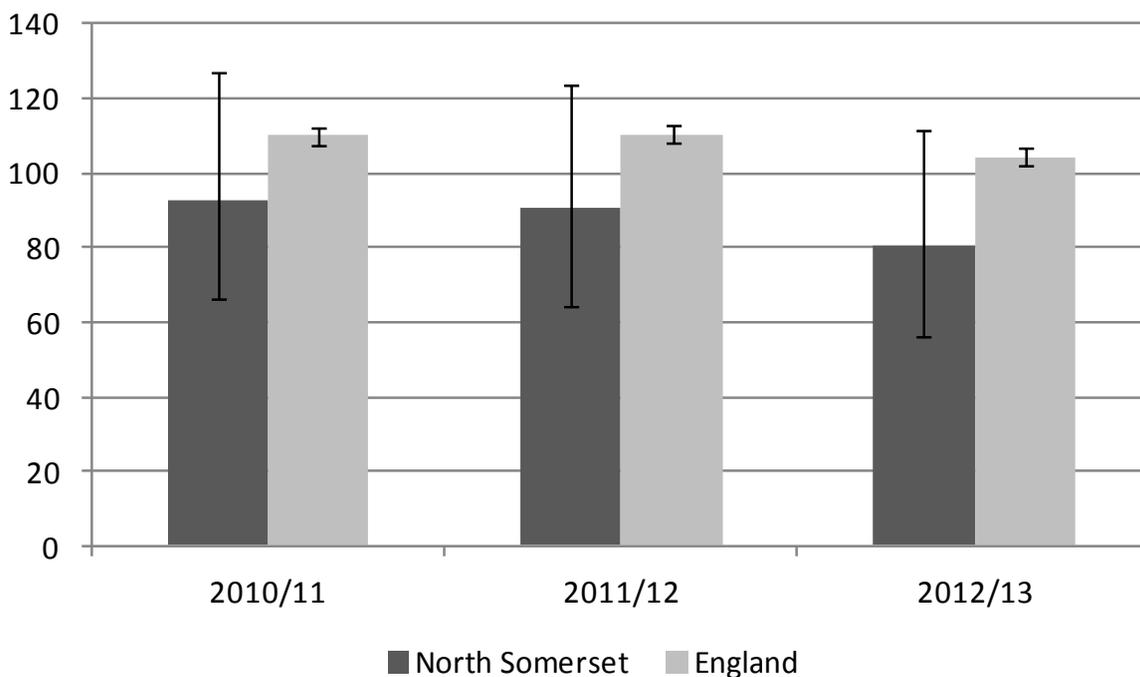
2.4 Eye conditions

2.4.1 Age related macular degeneration

Age related macular degeneration (AMD) is the leading cause of certifiable visual loss in the UK. There are two main types: “dry” and “wet” (see *Glossary*, page 24). Risk factors for AMD include smoking, increasing age and most significantly a family history.

Data for 2012/13 show that 47% of new CVIs in North Somerset were attributed to AMD in people aged 65 years or over (n=36). This is higher than the national average (42%). Figure 1 presents the rate of new certifications of CVI due to AMD in persons aged 65 and over, in North Somerset and England. Comparison of data between years should be interpreted with caution due to the small numbers involved and the natural yearly variation. Additionally, the issues discussed previously with regard to the CVIs being an underestimate of actual incidence apply again here.

Figure 1: New Certifications of Visual Impairment (CVI) due to age related macular degeneration (AMD) aged 65+, rate per 100,000 population



Data source: Public Health Outcomes Framework

Table 5 presents modelled estimates of AMD, “wet” AMD, “dry” AMD and drusen for North Somerset. The estimates take into account the difference in prevalence observed among different age groups, sexes and ethnic group.

Table 5: Estimated numbers and prevalence (in population aged 50+) of AMD in North Somerset

	NV-AMD (wet)		Geographic Atrophy (dry)		Drusen	
	No.	% population aged 50+	No.	% population aged 50+	No.	% population aged 50+
North Somerset	1,610	1.93	788	0.94	9,824	11.77
BNSSSG	9,584	1.85	4,674	0.90	59,541	11.50

Data source: National Eye Health Epidemiological Model and ONS

Approximately one-third of AMD cases are dry AMD, for which there is no cure or treatment. The remainder are wet AMD, for which anti VEGF drugs can slow the progression of the disease. The presence of a few small drusen is normal with advancing age and drusen alone do not usually cause vision loss. However, the presence of larger and more numerous drusen in the macula is a common early sign of age-related macular degeneration (AMD).¹⁹ Although there is no beneficial treatment for drusen, diet and AREDS 2* formulation supplements are advised. The NEHEM model estimates that there could be nearly 10,000 people with drusen in North Somerset, which means there may be over 12,000 people with some form of AMD.

As there is no effective treatment, cases of dry AMD are usually monitored by optometrists when patients attend for routine sight testing. Patients are referred if wet AMD develops concurrently with the dry or if the level of vision is reduced such that referral for CVI registration or hospital low vision aid services is required. Because these cases are monitored in this way, the total number of cases of dry AMD known to eye care services is unknown.

It is not clear from local hospital episode statistics what proportion of patients seen has wet AMD. In addition, coding of outpatient data is not detailed enough to allow us to determine the proportion of cases of all types of macular degeneration known to local health services.

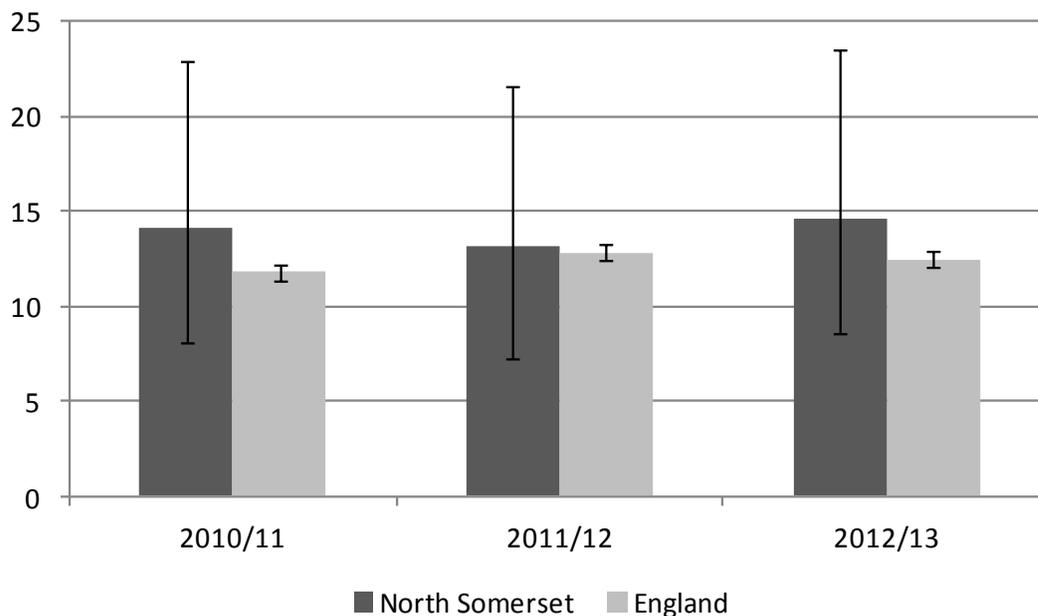
* AREDS2 formulation is a nutritional supplement that can reduce the risk of developing advanced AMD. It was developed by researchers at the National Institutes of Health's National Eye Institute (<https://www.nei.nih.gov/areds2/MediaQandA>)

2.4.2 Glaucoma

Glaucoma is an asymptomatic disease (in its early stages) that damages the optic nerve and can lead to blindness. Risk factors include increasing age, family history, ethnicity and ocular hypertension. Sight loss in glaucoma is not reversible, however the onset of glaucoma is gradual and the condition can be treated with medication, laser or filtration surgery. Ocular hypertension (OHT) is an additionally important condition to measure as patients diagnosed with OHT are at increased risk of developing glaucoma and therefore require ongoing monitoring.

There are an average of 16 new CVIs due to glaucoma in people aged 40 years and over in North Somerset each year. The rates per 100,000 population for North Somerset compared to England are presented in figure 2.

Figure 2: New Certifications of Visual Impairment (CVI) due to glaucoma aged 40+, rate per 100,000 population



Data source: Public Health Outcomes Framework

Given the known issues with CVI registrations, as discussed previously, data on glaucoma are presented in table 6 using modelled estimates. These estimates are thought to be an underestimate of true prevalence as the definition of glaucoma used is more likely to pick up more advanced cases and miss early cases with subtle changes.

An equity profile produced by Bradford and Airedale PCT suggests that these estimates may underestimate the prevalence of glaucoma by 1.5 to 2 times.

Table 6: Expected number of glaucoma cases in North Somerset

	Estimated glaucoma cases			Suspected glaucoma cases*			Ocular Hypertension (% population 30+)
	High	Low	Mean (% population 30+)	<60 years	60+ years	Total (% population 30+)	
North Somerset	3,302	1,452	2,314 (1.7%)	3,992	4,010	8,002 (5.8%)	4,388 (3.2%)
BNSSSG	20,647	9,187	14,548 (1.6%)	27,849	24,105	51,955 (5.8%)	28,843 (3.2%)

Data source: National Eye Health Epidemiological Model and ONS

* Defined as those who had an absolute field defect and either a cup:disc ratio of ≥ 0.5 but < 0.7 or asymmetry of ≥ 0.2 but < 0.3

2.4.3 Cataract

A cataract is the clouding of the eye’s natural lens. The cataract can increase in size and density over time and cloud more of the lens, therefore reducing vision. Risk factors for age-related cataracts include hereditary factors, increasing age, smoking, diabetes and ultraviolet light exposure.

Modelled estimates for cataract prevalence are presented in table 7. The base prevalence data used in the model are based on a study of residents in Somerset and Avon and therefore the results are considered generalisable to North Somerset. The estimates are based on clinical need and therefore are an estimate of “surgical” cataract; they are therefore more likely to be representative of the need for cataract services locally. A surgical cataract is a cataract that is also causing patient symptoms and therefore extraction is more likely to be beneficial. The prevalence of non-symptomatic cataract is likely to be higher but not necessarily of interest as treatment is not indicated.

Table 7: Estimated prevalence of surgical cataract

	Cataract prevalence estimate No. (% population 40+)
North Somerset	2,443 (2.2%)
BNSSSG	14,643 (2.0%)

Data source: National Eye Health Epidemiological Model and RNIB Sight Loss Data Tool

Analysis of HES inpatient data provides an estimate of demand for healthcare services (table 8). In-patient data are considered more robust than outpatients because payment for procedures under payment by results relies on accurate coding of these procedures. Patients undergoing day case procedures such as cataract are “admitted” and are therefore covered by inpatient data.

Table 8: Number of ophthalmic inpatient admissions with cataracts* as the main diagnosis, 2012/13

	No. of ophthalmic admissions	Senile cataracts	Other cataracts	Total cataracts (% of all ophthalmic admissions)
North Somerset	2,199	946	365	1311 (59.6%)
BNSSSG	15,061	4,061	4,543	8,604 (57.1%)

Data source: Hospital Episodes Statistics Data, HSCIC

*Defined as: senile cataract and other cataract

2.4.4 Diabetic eye disease

Diabetic retinopathy is a complication of diabetes and usually affects both eyes. Having been the leading cause of blindness in working age people over the last 50 years, it has recently been overtaken by inherited retinal disorders.²⁰ However, it remains an important cause of certifiable blindness and highlights the importance of screening, which may be one of the causes for this change. Often there are no early symptoms but the disease responds well to early intervention. Effective management of diabetes can help prevent the onset and progression of diabetic retinopathy. Treatment can also involve laser surgery, vitrectomy and anti-VEGF drugs.

Numbers of new CVIs due to diabetic eye disease in people aged 12 for North Somerset are very small and (<5 for 2012/13). However, given the current and ongoing rise of diabetes in the UK,²¹ diabetic retinopathy is expected to have a major impact of eye services in the future. Diabetes prevalence can provide any important indicator of future eye health need. Estimates suggest there were 13,822 adults in North Somerset living with diabetes in 2011 and this was expected to rise by 20% by 2020 to 16,639, higher than the estimated national increase of 9.8%. Modelled estimates for diabetic retinopathy prevalence suggest there are 3,870 people living with the condition in North Somerset and this is predicted to rise to 4,659 in 2020.

2.4.4.1 Diabetic retinopathy screening

Diabetic retinopathy screening is an effective way of detecting the disease as early as possible. A national screening programme for England was established in 2003. All people aged 12 and over and with diabetes (type 1 or 2) are offered annual screening. Screening is provided in a variety of locations, including GP surgeries, hospitals and opticians' practices.²² The programme covering North Somerset is the *Bristol and Weston Diabetic Eye Screening Programme (DESP)*.

In 2011/12, the proportion of North Somerset patients who were invited to and attended a retinal screening appointment was 87.4% (compared to 83.3% in Bristol, 84.2% in South Gloucestershire and 92.3% in Somerset). More recent data available for April-June 2013 showed uptake was 79.2% for Bristol and Weston DESP (data not available by local authority), below the England average of 82.8%.

2.4.5 Low vision

This refers to people who have some useful vision which can often be improved with low vision aids and adaptations. Low vision services may be based in a local hospital, located in opticians' practices or offered from a resource centre run by the local society for people with sight loss.²³ In North Somerset, a low vision clinic is available at Weston General Hospital and further services (e.g. rehabilitation and support) are provided by *Vision North Somerset*. Modelled estimates of low vision suggest are presented in table 9.

Table 9: Estimates of low vision, North Somerset

	Impaired vision (binocular acuity <6/18)		Low vision (binocular acuity <6/18 to 3/60)		Severe sight impairment (binocular acuity <3/60)	
	No.	% 50+ population	No.	% 50+ population	No.	% 50+ population
North Somerset	3,753	4.5	3,182	3.8	572	0.7
BNSSSG	22,443	4.3	19,052	3.7	3,408	0.7

Data source: National Eye Health Epidemiological Model (NEHEM)

Low vision services should provide appropriate advice about low vision aids, lighting, rehabilitation support (including mobility; e.g. long cane training to remain independent)

and information about the condition and support available. Low vision aids include both optical low vision aids (e.g. magnifiers and binoculars) and non-optical low-vision aids (e.g. anglepoise lamp and bold print books). Low vision support and rehabilitation are vital for enabling independence and improving quality of life, including impacting on other areas of health, such as reduction of injurious falls and depression.

2.4.6 Uncorrected refractive error

Refractive errors refer to the focusing errors of short sight (myopia), long sight (hyperopia) and astigmatism. All of these conditions give rise to blurred images on the retina unless corrected.

It is estimated that 6% of children at age 6-7years and 10% of children at age 12-13 may have a refractive error.²⁴ Not all of these children will present with symptoms or be found at school entry screening.²⁴ In adults, there is little data for those aged between 18 and 30 years. For adults aged 30-70, it is estimated 40% will have a refractive error.^{25,26} A proportion of these will already visited the optometrist and been advised to wear spectacles. However, this 40% will also include a number who do not have regular sight tests and do not wear spectacles. It is estimated that 12.5% of visual impairment in the older population is due to refractive error.² Taking into account the overall prevalence of visual impairment this would indicate that 2-7% have vision of less than 6/12 because they either don't have or don't wear appropriate spectacles. They are likely to be coping with a level of vision impairment that reduce their performance of everyday tasks, yet which could be remedied with suitable spectacles. Sight tests are the only way to reliably detect and fully correct refractive errors (see section 4.1, page 21).

2.5 Children and Young People

Although incidence of visual impairment in children is low, the impact of such a condition is high. The causes of vision impairment in childhood are generally different to the causes of sight loss in adults. The four most common causes are: cerebral vision impairment, optic nerve disorders, retinal or macular dystrophies and congenital cataracts. Children most at risk of vision impairment are:

- Premature and low birth weight babies;
- Genetic eye conditions;
- Maternal infections (e.g. measles and rubella);
- Maternal alcohol and drug exposure;
- Maternal smoking;
- Children with learning disabilities.

Children with vision impairment have different needs from adults with sight loss. Significant vision impairment can delay early childhood development and learning; including social communication, mobility, and everyday living skills. Children with vision impairment are at risk of poor outcomes across a range of emotional and social wellbeing indicators,²⁷ which can have an effect on adult life, limiting work opportunities.²⁸ It can also have a major impact on the wellbeing and coping capacities of the family. It is therefore vital that support is provided from birth, throughout childhood and the transition into adulthood.²³

The number of children registered blind or partially sighted (rounded to the nearest 5), as of March 2014 are shown in table 10. The table also presents data on children with special education needs (SEN). Children with SEN who are known to visual impairment services are recorded by the local authority.

Table 10: Number of children registered blind or partially sighted (March 2014)* and number of pupils with visual impairment as primary SEN (January 2013)**

	Blind		Partially sighted		Total number of pupils with visual impairment as primary SEN
	0 to 4	5 to 17	0 to 4	5 to 17	
North Somerset	5	5	5	10	16

*All data are rounded to the nearest 5

**SEN: Special Education Needs.

Given the known issues with the registration data, the data presented above are likely to be an underestimate. By applying base prevalence rates (0.05% for blind and 0.15% for partially sighted) to population statistics from 2011, it is estimated that numbers in table 11 may be a more likely reflection of children living with sight loss in North Somerset.

Table 11: Estimated number of children who are blind or partially sighted

	Blind (0-16 years)	Partially sighted (0-16 years)	Total (0-16 years)	Additional disabilities (% total)
North Somerset	20	59	79	40 (51%)

Data source: RNIB data tool

The prevalence of vision impairment is significantly higher in children with learning difficulties than in the overall child population.¹⁰ Data on learning disabilities and vision impairment alone are not available, however registered data and estimates of vision impairment and any disability (including mental health problems, learning disability, physical disability and hearing impairment) are available. Approximately 12.5% of children registered blind or partially sighted are also registered with additional disabilities. In contrast, estimates based on the literature suggest that around 50% of children could have an additional disability (table 11).

Early detection and treatment interventions are imperative to avoid preventable sight loss. There are three key stages at which all children should be screened for ocular conditions and vision impairment: the new-born examination; the 6 to 8 weeks review and the school-entry vision check at the age of 4-5 years.²³

3. Current strategies and key drivers

3.1 UK vision strategy²⁹

The UK vision strategy was launched in 2008 and refreshed in 2013 with the launch of the 2013-2018, which has the following outcomes:

1. Everyone in the UK looks after their eyes and their sight;
2. Everyone with an eye condition receives timely treatment and, if permanent sight loss occurs, early and appropriate services and support are available and accessible to all;
3. A society in which people with sight loss can fully participate.

3.2 Public health outcomes framework³⁰

The Public Health Outcomes Framework contains three indicators relevant to preventable sight loss: *the proportion of Certificate of Visual Impairment (CVI) registrations that are due to: age related macular degeneration (AMD), glaucoma and diabetic retinopathy*. There are a further four indicators in the framework which may also be assisted by improvements in eye health: *falls and Injuries in the over 65s; hip fractures in the over 65s; self reported well being; health related quality of life for older people*.

3.3 NHS outcomes framework 2013/14³¹

The NHS Outcomes Framework sets five "domains" through which the effectiveness of health care will be measured (e.g. *Enhancing quality of life for people with long-term conditions* and *Ensuring that people have a positive experience of care*). The UK Vision Strategy Project Team state that reducing avoidable sight loss and improving eye health contributes to each of these, either directly or indirectly.

3.4 Quality Innovation Productivity and Prevention (QIPP) Programme³²

The Quality, Innovation, Productivity and Prevention (QIPP) was initiated by the Department of Health to provide a central resource of evidence showing how to improve quality whilst making efficiency savings. Ophthalmology is an area which may benefit from development under the QIPP programme. There is scope to optimise use of the

available workforce and improve treatment pathways for patients as outlined by the National Eyecare Steering Group 1st Report.³³

3.5 NHS England ‘Call to Action’: Improving eye health and reducing sight loss³⁴

In 2014, NHS England undertook a consultation exercise focused on improving eye health and the provision of NHS eye health services. Seven key themes were identified:

1. IT and communication as a barrier to improving efficiency and quality of eye care;
2. Developing clinical leadership and changing organizational culture;
3. Developing pathways;
4. Making better use of existing skills and extending the scope and role of non-medical personnel;
5. Reviewing General Ophthalmic Services and exploring new contractual opportunities;
6. Improving case management and more patient centric care;
7. Improving accessibility to sight tests, especially for at risk and vulnerable groups.

3.6 Royal College of General Practitioners (RCGP) Clinical Priority Programme

The RCGP selects clinical areas to raise their profile and increase awareness both within general practice and across primary care. Eye Health has been made a priority for April 2013-March 2016. The priority aims to reduce preventable sight loss amongst the ageing population across the UK and improve eye referral to eye care services of any patient with signs of “correctable” sight loss.³⁵

3.7 WHO Vision 2020³⁶

Vision 2020 is a global initiative that aims to eliminate avoidable blindness by the year 2020. It is a partnership that provides guidance, technical and resource support to countries that have formally adopted its agenda.

3.8 CCG Outcomes Framework/Local CCG priorities

The CCG outcomes indicators have been selected on the basis that they help contribute to better outcomes across the five domains of the NHS Outcomes Framework (see *Section 3.3*). The indicators are useful for CCGs and Health and Wellbeing Boards in identifying local priorities for quality improvement.

4. Current Service Provision

See also section 2.4.4.1 on diabetic retinopathy screening (page 15).

There are a range of service providers that provide eye services for North Somerset, from the identification of sight loss to supporting people with sight loss to remain independent; these include optometrists, ophthalmology departments/hospitals, GPs, community and voluntary sector and social care, who should all assess identify and address local need.

4.1 Sight tests

Regular sight tests present an ideal opportunity to detect reduced vision and early signs of eye disease so that corrective spectacles (if appropriate) or prompt treatment can be sought.

NHS sight tests are carried out by community optometrists under General Ophthalmic Services (GOS). All people aged under 16 or under 19 years of age and in full-time education and over 60 years of age are automatically entitled to NHS tests. Between these ages, NHS sight tests may be obtained only if a person has diabetes or glaucoma or a close relative with glaucoma or if they are in receipt of some government benefits e.g. tax or pension credits. NHS sight tests currently account for an estimated 70% of all eye examinations.³⁷ In addition to the detection of refractive error the sight test is used as a tool for opportunistic detection of eye diseases e.g. Glaucoma. This is reflected in the inclusion of disease related exemption categories for GOS sight tests. Sudden or significant changes in sight may prompt a person to attend for an eye test as the first point of contact with health services. However, more subtle disease changes may not produce noticeable symptoms in the early stages so routine sight tests, in the absence of more formal targeted screening programmes, are essential in the detection and early treatment of eye conditions.

Data are not available for North Somerset on NHS sight tests. Data for BNSSSG can be found in the BNSSSG Eye Health Needs Assessment.

4.2 Hospital activity

There is no provider of secondary care for eye health within North Somerset and therefore patients visit hospitals and treatment centres in Bristol and Somerset. There are five main providers, which are presented in table 12 which shows the number of

people admitted to hospital in 2012/13 for which their primary diagnosis related to the eye and adnexa.

Table 12: Finished admission episodes with a primary diagnosis of 'Diseases of the eye and adnexa (H00-H59)', by provider, 2012/13

Provider	No. of episodes
University Hospitals Bristol	7694
Taunton and Somerset	3250
Emersons Green	1251
Yeovil District Hospital	1058
Shepton Mallet Treatment Centre	1557

Data source: Hospital Episodes Statistics, HSCIC

4.3 Primary care and community services

A survey³⁸ has revealed that many GPs in the UK are not confident in detecting early signs of major eye diseases. Just one third (34.1%) of respondents were confident in diagnosing symptoms or signs of age-related macular degeneration, with only half of GPs confident in diagnosing diabetic retinopathy (48.8%), glaucoma (51.2%) or refractive error (49.3%). Increasing confidence (e.g. through training) amongst GPs would have an impact on early detection of the major eye diseases.

In North Somerset, there are currently no enhanced services in the community. *Vision North Somerset* provides a number of services for visually impaired people (in addition to their responsibility for registration of blind and partially sighted people):

- Resource and information centre;
- Hospital information service;
- Rehabilitation;
- Help for deaf and hard of hearing people.

5. Recommendations and challenges for consideration

- **Early detection is a priority.** Provision and monitoring of effective schemes promoting early detection, including promotion of regular eye sight tests and awareness raising.
- **Increasing ageing population** on current service provision.
- **Increase in diabetes** on current service provision.
- **Equity of access.** This includes consideration of those living in deprived areas and vulnerable groups, particularly those with learning disabilities.
- **Good quality support services** for those who have visual impairment and the impact of visual impairment on their quality of life. This includes ensuring low vision services offer a range of low vision options, e.g. lighting, low vision aids, rehabilitation support and counselling. Additional consideration of co-morbidities linked to eye health, e.g. reducing depression and social isolation.
- **Mapping of eye health services** (community, hospital, voluntary etc) to see how they are being met and identify any gaps. Consideration of what models of service delivery are needed.
- **Link with other relevant strategies and care pathways**, e.g. falls, stroke.

Glossary of eye conditions

Age-related macular degeneration

Patients with AMD lose their central vision so tasks that involve detail like reading and face recognition become difficult if not impossible. Peripheral vision is usually preserved. There are two types of AMD, commonly known as “dry” and “wet”.

Whilst there is no suitable treatment for dry AMD at present, the National Institute for Health and Care Excellence (NICE) has confirmed that in some cases of wet AMD, treatment by injection with an anti VEGF agent Ranibizumab (Lucentis) or Aflibercept (Eylea) can reduce loss of vision (NICE 2008, 2013).³⁹

Blindness

An inability to see or absence or loss of sight severe enough for someone to be unable to perform any work for which eyesight is essential.⁴⁰

Cataract

A cataract is the development of irregularities in the structure of the crystalline lens that leads to a reduction of transparency.³⁹ The symptoms most commonly reported are blurry vision, problems with light, ‘faded’ colours, double or multiple vision.¹

Diabetic retinopathy

A complication of diabetes mellitus, usually affecting both eyes. As the disease progresses, some of the blood vessels that nourish the retina are blocked or become leaky, causing vision loss through either proliferative retinopathy or macular oedema.¹

Drusen

Drusen (singular, "druse") are tiny yellow or white accumulations of extracellular material that build up between Bruch's membrane and the retinal pigment epithelium (RPE) of the retina. The presence of a few small drusen is normal with advancing age and drusen alone do not usually cause vision loss. However, the presence of larger and more numerous drusen at the macula is a common early sign of age-related macular degeneration (AMD).¹⁹

Glaucoma

Glaucoma refers to a group of conditions characterised by visual field loss, and pathological changes in the optic nerve head. There may also be raised intra-ocular pressure (IOP) as in Chronic Open Angle Glaucoma (COAG) which is a common form of the condition. Sight loss in glaucoma is not reversible.

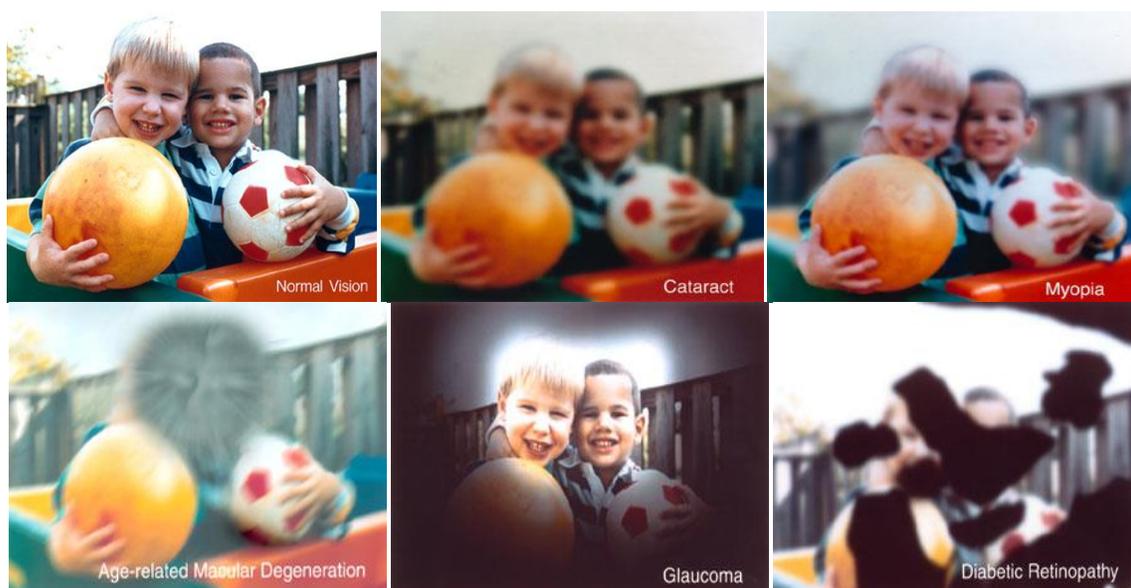
Ocular hypertension (OHT) refers to patients who have raised IOP but do not have any sign of glaucomatous damage at the optic nerve head or visual field loss. Patients diagnosed with OHT require ongoing monitoring as they have significantly increased risk of developing COAG later.

Glaucoma suspects may have early signs of optic nerve damage but may not yet exhibit detectable field loss. They may or may not have raised IOP. The onset of glaucoma is gradual.¹

Uncorrected refractive error

Refractive errors refer to the focusing errors of short sight (myopia), long sight (hyperopia) and astigmatism. All of these conditions give rise to blurred images on the retina unless corrected with glasses or contact lenses.³⁹

Figure 3: Visual impairment patterns expected in different eye conditions compared to normal vision¹



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