

Scottish Public Health Network (ScotPHN)

**Eye Conditions in Scotland
Report 1: Estimates of Current and Future**

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Preface

Providing care for people at risk of sight loss has been at the heart of what the NHS has done since it came into existence. For most of that time it has worked to help improve the vision that people have and – where necessary – provide surgical treatment for conditions such as cataract.

Recent advances in how we can provide care for people at risk of sight loss is revolutionising services. New technologies mean that laser surgery can be offered more rapidly and, with the development of new biological agents, we can provide care for conditions that were previously untreatable.

To help understand the potential impact of these changes, ScotPHN has worked with the Scottish Government and colleagues in the West of Scotland to explore the current and future epidemiology of eye conditions in Scotland. I would like to thank them for the advice and guidance which they have given. I would especially like to thank Cathy Johnman from the University of Glasgow and NHS Greater Glasgow and Clyde who led this work.

This report – the first – provides estimates of the current and future prevalence of major eye conditions that use NHS ophthalmology services. A second report that considers the health economic consequences of these estimates is in development and further reports – especially considering the wider consequences of prevention – are being considered.

A handwritten signature in black ink, appearing to read 'P. Mackie', with a horizontal line underneath it.

Phil Mackie

ScotPHN Lead

Background

Similar to other health and care service areas, there has been increasing demand on eye care services due to the ageing population, screening, earlier intervention, and the availability of new treatments. Increasing demand comes predominantly from patients with long term eye conditions, such as cataracts, macular degeneration, glaucoma, and diabetic retinopathy. These patients are often the most vulnerable and at the greatest risk of irreversible loss of vision. Many long term eye conditions require long term 'return' or 'follow-up' appointments, for repeat monitoring and regular treatment.

Vision 2020: The Right to Sight¹ is a global World Health organisation (WHO) initiative to eliminate avoidable blindness by the year 2020. In 2006, its remit was extended to include visual impairment. The most recent WHO Action Plan associated with Vision 2020, was unanimously adopted by Member States at the World Health Assembly in 2013². This Action Plan recommended the development and implementation of country plans, to address visual impairment. In response, the United Kingdom (UK) Government updated the UK Vision Strategy³ which provides a high-level framework for action to improve eye health of the people of the UK. This multi-organisation (including NHS and voluntary organisations) developed strategy aims to: improve eye health of the people of the UK; eliminate avoidable sight loss and deliver excellent support to those with a visual impairment; and enhance the inclusion, participation and independence of blind and partially sighted people.

The Scottish Vision Strategy 2013-2018⁴ is Scotland's contribution to the World Health Assembly's resolution to eliminate avoidable eyesight loss by 2020. It aims to build on recent developments, such as: independent prescribing optometrists, free eye tests, and integrated eye care pathways. However, it acknowledges that demand for eye care services is already out-stripping demand and that the changing population demographics, is likely to have a significant effect on services in the future. It aims to improve coordination, integration, reach, and effectiveness of eye health services over the next five years.

In addition, the Scottish Government's Modern Outpatient: A collaborative approach 2017-2020 (to deliver care closer to patients home, person centred, utilise emerging technologies, maximizing the role of primary, secondary, and community care), and the Scottish Chief Medical Officer's Realising Realistic Medicine report (which encourages a reduction in unnecessary variation in practice and outcomes) have important implications for health service quality and improvement in eye care services.

¹ <https://www.iapb.org/vision-2020/>

² http://apps.who.int/gb/ebwha/pdf_files/WHA66-REC1/A66_REC1-en.pdf?ua=1

³ <https://www.visionuk.org.uk/>

⁴ https://www.rnib.org.uk/sites/default/files/Scot_Vision_Strategy_refresh.pdf

To enable effective planning of services and respond to the needs of an ageing population, NES Education for Scotland undertook a review of current provision of low vision services within Scotland⁵. Using detailed questionnaires to gather data from low vision services across Scotland, it concluded that there is lack of uniformity of low vision services and a scarcity in rural areas and inequality in terms of both waiting times and access to aids.

The National Ophthalmology Workstream: Hospital Eye Services highlights that patients with ophthalmic conditions are often vulnerable and must be supported by responsive health services. It recommends that to make best use of existing resources and develop them effectively requires:

- Improving datasets and collection of data to develop and support services;
- Patients are offered appropriate treatments within a suitable timeframes;
- Current capacity is optimised;
- Systems are managed in a patient focussed manner; and
- Maximising use of the workforce.

In addition, it recommends that to ensure the sustainability of service provision, services should take a long term view to plan and deliver healthcare. Therefore, it is important to estimate the current population prevalence of eye conditions to: estimate unmet need, and consider how to provide equitable access for all patients with the capacity to benefit from health care and treatment. It is also important to develop population projections to ensure that future planning of services considers the impact of changing demography on the epidemiology of the most common long-term eye conditions.

⁵ <http://www.gov.scot/Resource/0051/00516692.pdf>

Methods

The RNIB's Sight Loss Data Tool⁶ is the UK's biggest collection of eye health datasets. It provides easily accessible up-to-date evidence on sight loss (including, by condition) and those at risk of sight loss. It collates a wide range of publically available datasets and allows users to compare data, nationally and locally, across a set of key indicators. These indicators are broadly based either on official statistics (for example, National Records of Scotland [NRS], register of blind and partially sighted people) or modelled estimates based on existing research (for example, the number of people living with sight loss). However, the data has an over-reliance on CVI registrations which, since 2010, has been less reliable in Scotland (although, CVI has been included as an Eye Specific Indicator for Vision 2020 UK, by the Ophthalmic Public Health Committee).

In addition, the data are not presented in a way which allows standardisation to be undertaken easily; therefore, projections from the RNIB Data Tool by NHS Health Board do not take account of differences in the distribution of age, sex, and deprivation between areas. However, absolute numbers and percentage change in prevalence is likely to be of more interest for service planning, than comparing change between areas.

National population projections by age and sex are produced every two years. The projections are based on the most recently available mid-year population estimates and a set of underlying demographic assumptions regarding future fertility, mortality and migration. The population projections used for 2016, produced by NRS, are based on the 2012 mid-year population estimates. Modelling takes into account age, gender, severity, and cause of sight impairment in population areas. However, it does not take into account a number of other factors that may influence the results, for example: BME communities; local good practice on the eye care pathways; deprivation, or new treatment and delivery options (for example, port delivery systems or implants for AMD). In addition, no confidence intervals or sensitivity analyses are presented around the projections, meaning it is not possible to estimate how precise the projections are likely to be.

Percentage change in numbers of people living with long-term conditions is presented, rather than rate, because the projected increase in the Scotland's population over the next 25 years has been attributed to net in-migration to Scotland. This predicted in-migration population is likely to be younger and therefore at less risk of chronic eye conditions, such as, cataracts. For example, the RNIB Data Tool predicts an overall 43% increase in the number of Scots living with cataracts by 2030. However, estimates

⁶ <http://www.rnib.org.uk/professionals/knowledge-and-research-hub/key-information-and-statistics/sight-loss-data-tool>

of population change by the National Records of Scotland⁷, suggest that this equates to a ~0.5% increase in prevalence overall.

While alternative sources of population based data, such as the Scottish Health Survey, could be used to create similar projections, these have significant limitations: they rely on self-reporting - resulting in underestimates of prevalence (only 1.19% of males and 2.0% of females, reported eye complaints in 2016); the Scottish Health Survey is nationally representative but has small numbers from some NHS health Boards and from CH(C)Ps, resulting in a lack of precision for any estimate; and local surveys could provide local level data but mainly ask about eyesight problems in general, rather than providing data by condition.

Eye conditions include in this report are: early stage age related macular degeneration (AMD), late stage dry AMD, late stage wet AMD, cataracts, glaucoma, and diabetic retinopathy.

⁷ <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2016-based/list-of-tables>

Results

Table 1: number and rates per 1000 persons of long-term eye conditions by local authority area, 2016

Local authority /CHP	Early stage AM D	Rate per 1000	Late stage dry AM D	Rate per 1000	Late stage wet AM D	Rate per 1000	Cataracts	Rate per 1000	Glaucoma	Rate per 1000	Diabetic retinopathy	Rate per 1000
East Dunbartonshire	5,430	50.5	410	3.8	860	8.0	1,320	12.3	1,070	9.9	2,120	19.7
East Renfrewshire	4,310	45.9	330	3.5	690	7.4	1,040	11.1	890	9.5	1,800	19.2
Glasgow City	2,0530	33.4	1,550	2.5	3,170	5.2	4,740	7.7	5,510	9.0	12,260	19.9
Inverclyde	3,760	47.5	290	3.7	580	7.3	880	11.1	800	10.1	1,590	20.0
Renfrewshire	7,650	43.5	560	3.2	1,150	6.5	1,770	10.1	1,720	9.8	3,510	19.9
West Dunbartonshire	3,830	42.6	270	3.0	560	6.2	860	9.6	880	9.8	1,780	19.8
North Lanarkshire	13,320	39.2	920	2.7	1,900	5.6	2,960	8.7	3,270	9.6	6,680	19.7
South Lanarkshire	14,040	44.3	1,040	3.3	2,120	6.7	3,250	10.2	3,170	10.0	6,330	19.9
East Ayrshire	5,530	45.3	400	3.3	830	6.8	1,280	10.5	1,220	10.0	2,460	20.1
North Ayrshire	6,660	49.0	490	3.6	1,000	7.4	1,560	11.5	1,370	10.1	2,730	20.1
South Ayrshire	6,090	54.1	470	4.2	960	8.5	1,480	13.2	1,170	10.4	2,300	20.4
Total	91,150	41.7	6,730	3.1	13,820	6.3	21,140	9.7	21070	9.6	38,270	19.9

While rates of the different eye conditions varies between local authorities, this is in keeping with what is known about the population demographics e.g. Glasgow City has the lowest proportion of population aged 75 years and over (6.3%), compared with South Ayrshire which has the highest (10.8%). Rates of diabetic retinopathy are broadly the same across the different local authorities.

Macular degeneration

Age-related macular degeneration (AMD) is the most common form of macular degeneration and is the term given to ageing changes in the eye, without any other obvious cause. These changes occur in the macula. It is a painless eye condition that generally leads to the gradual impairment of vision, but can sometimes cause a rapid reduction in vision. AMD has been classified as early, intermediate or late according to the stage of disease progression. Late AMD can be further classified as either 'wet' AMD (neovascular) or 'dry' AMD (advanced geographic atrophy). However, NICE recommends that late AMD should not be referred to as "dry AMD".⁸ The categorisation used in the RNIB Data Tool is: early stage AMD, late stage dry AMD, and late stage wet AMD. Consequences of this condition can be severe and it is a leading cause of certification for vision impairment.

The prevalence of late AMD in the UK, amongst those aged 50 years or more, is estimated to be around 2.4%. This increases to 4.8% in people aged 65 years or more, and 12.2% in people aged 80 years or more. While the exact cause of AMD is unknown, risk factors include: age, family history of AMD, smoking, obesity, and hypertension. The mainstay of management of AMD is currently via management of risk factors, comorbidities, support from low vision services, and intravitreal injection. Guidelines on Age-related Macular Degeneration: Diagnosis and Management were recently published by NICE.⁷

⁸ <https://www.nice.org.uk/guidance/ng82/evidence/full-guideline-pdf-170036251098>

Early stage AMD

Table 2: predicted change for early stage AMD, by Scotland and Health Board areas.

	2016	2020	2025	2030	%change
SCOTLAND	231,790	250,760	273,290	295,910	+28%
NHS Ayrshire & Arran	18,280	19,770	21,440	22,910	+25%
NHS Borders	6,100	6,660	7,320	7,930	+30%
NHS Dumfries & Galloway	8,260	8,840	9,470	9,960	+21%
NHS Fife	16,660	18,160	19,900	21,560	+29%
NHS Forth Valley	13,000	14,300	15,840	17,300	+33%
NHS Grampian	23,970	26,000	28,520	31,150	+30%
NHS Greater Glasgow & Clyde	45,510	48,380	51,780	55,620	+22%
NHS Highland	16,230	17,670	19,290	20,770	+28%
NHS Lanarkshire	27,360	29,830	32,710	35,500	+30%
NHS Lothian	33,100	36,080	39,900	44,060	+33%
NHS Orkney	1,100	1,210	1,340	1,450	+32%
NHS Shetland	1,030	1,140	1,290	1,430	+39%
NHS Tayside	19,690	21,110	22,750	24,410	+24%
NHS Western Isles (Eilean Siar)	1,500	1,610	1,740	1,860	+24%

Table 3: predicted change for early stage AMD, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% change
WEST OF SCOTLAND	91,150	97,980	105,930	114,030	+25%
East Dunbartonshire	5,430	5,890	6,370	6,790	+25%
East Renfrewshire	4,310	4,640	5,030	5,420	+26%
Glasgow City	20,530	21,510	22,820	24,660	+20%
Inverclyde	3,760	4,000	4,250	4,490	+19%
Renfrewshire	7,650	8,250	8,920	9,560	+25%
West Dunbartonshire	3,830	4,090	4,390	4,700	+23%
North Lanarkshire	13,320	14,540	15,970	17,350	+30%
South Lanarkshire	14,040	15,290	16,740	18,150	+29%
East Ayrshire	5,530	6,010	6,560	7,070	+28%
North Ayrshire	6,660	7,220	7,830	8,350	+25%
South Ayrshire	6,090	6,540	7,050	7,490	+23%

Late stage dry

Table 4: predicted change for late stage dry AMD, by Scotland and Health Board areas.

	2016	2020	2025	2030	%Change
SCOTLAND	17,160	18,840	21,270	24,240	+41%
NHS Ayrshire & Arran	1,360	1,510	1,720	1,940	+43%
NHS Borders	450	500	580	670	+49%
NHS Dumfries & Galloway	630	690	780	870	+38%
NHS Fife	1,220	1,360	1,560	1,790	+47%
NHS Forth Valley	930	1,060	1,220	1,400	+51%
NHS Grampian	1,750	1,920	2,180	2,530	+45%
NHS Greater Glasgow & Clyde	3,410	3,640	3,960	4,420	+30%
NHS Highland	1,200	1,340	1,540	1,770	+48%
NHS Lanarkshire	1,960	2,180	2,480	2,830	+44%
NHS Lothian	2,460	2,690	3,050	3,530	+43%
NHS Orkney	80	90	110	120	+50%
NHS Shetland	70	80	100	110	+57%
NHS Tayside	1,520	1,650	1,850	2,100	+38%
NHS Western Isles (Eilean Siar)	120	130	140	160	+33%

Table 5: predicted change for late stage dry AMD, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% Change
WEST OF SCOTLAND	6730	7330	8160	9190	+37%
East Dunbartonshire	410	470	530	600	+46%
East Renfrewshire	330	360	410	460	+39%
Glasgow City	1,550	1,600	1,670	1,830	+18%
Inverclyde	290	310	340	380	+31%
Renfrewshire	560	610	690	780	+39%
West Dunbartonshire	270	290	320	370	+37%
North Lanarkshire	920	1,030	1,180	1,340	+46%
South Lanarkshire	1,040	1,150	1,300	1,490	+43%
East Ayrshire	400	450	510	580	+45%
North Ayrshire	490	550	630	710	+45%
South Ayrshire	470	510	580	650	+38%

Late stage wet AMD

Table 6: predicted change for late stage wet AMD, by Scotland and Health Board areas.

	2016	2020	2025	2030	%Change
SCOTLAND	37,256	43,380	45,715	52,270	+40%
NHS Ayrshire & Arran	2790	3160	3510	4020	+44%
NHS Borders	920	1,050	1,190	1,390	+51%
NHS Dumfries & Galloway	1,290	1,420	1,600	1,810	+40%
NHS Fife	2,510	2,950	3,200	3,720	+48%
NHS Forth Valley	1,930	2,430	2,510	2,920	+51%
NHS Grampian	3,590	4,280	4,490	5,250	+46%
NHS Greater Glasgow & Clyde	7,010	8,270	8,130	9,130	+30%
NHS Highland	4,476	4,840	5,195	5,710	+28%
NHS Lanarkshire	4,020	5,090	5,090	5,840	+45%
NHS Lothian	5,050	5,950	6,280	7,310	+45%
NHS Orkney	160	190	230	260	+63%
NHS Shetland	150	190	200	240	+60%
NHS Tayside	3,120	3,320	3,800	4,340	+39%
NHS Western Isles (Eilean Siar)	240	240	290	330	+38%

Table 7: predicted change for late stage wet AMD, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% Change
WEST OF SCOTLAND	13820	16520	16730	18990	+37%
East Dunbartonshire	860	970	1,100	1,250	+45%
East Renfrewshire	690	760	830	950	+38%
Glasgow City	3,170	3,780	3,430	3,780	+19%
Inverclyde	580	640	690	780	+34%
Renfrewshire	1,150	1,410	1,410	1,610	+40%
West Dunbartonshire	560	710	670	760	+36%
North Lanarkshire	1,900	2,570	2,420	2,780	+46%
South Lanarkshire	2,120	2,520	2,670	3,060	+44%
East Ayrshire	830	1,020	1,040	1,200	+45%
North Ayrshire	1,000	1,150	1,280	1,470	+47%
South Ayrshire	960	990	1,190	1,350	+41%

All types of age-related macular degeneration are projected to increase by 2030. The greatest increase is estimated to be in the number of people living with late stage dry macular degeneration (46%). However, not all Health board areas are projected to increase by the same amount: the highest increase projected, for this condition, is in NHS Shetland (65%), compared with the lowest in Dumfries and Galloway (38%). Early stage macular degeneration is projected to increase, overall, by 30%, with the greatest increase in NHS Shetland (42%) and the lowest in NHS Dumfries and Galloway (42%). The number of people living with late stage dry macular degeneration is estimated to increase by 44%, with the greatest increase in NHS Shetland (61%) and the lowest in NHS Greater Glasgow and Clyde (37%).

In the West of Scotland early AMD is predicted to increase by 25%, with both late stage dry and late stage wet estimated to increase by 37%. The greatest increase is in late stage wet for North Lanarkshire, at 47%.

Cataracts

A cataract is the loss of transparency of the lens of the eye as a result of tissue breakdown and protein clumping. They are often considered part of the ageing process. However, they can also be congenital or secondary to other causes e.g. chronic uveitis, prior intra-ocular surgery such as glaucoma filtration surgery or vitrectomy, and trauma. Risk factors for cataract include: gender, diabetes, sunlight, steroids, diet, smoking, and alcohol.

Cataract is a common and important cause of visual impairment in Scotland. Cataract extraction accounts for a significant proportion of the surgical workload of most ophthalmologists and cataract surgery continues to be the commonest elective surgical procedure performed in the UK.⁹

The guidelines on the management of cataracts were published by The National Institute for Health and Care Excellence (NICE in 2017). However, the mainstay of management is monitoring in the community and hospital based cataract surgery. The Royal College of Ophthalmologists suggest that the demand for surgery is likely to rise by 25% over the next 10 years¹⁰

⁹ <https://www.rcophth.ac.uk/wp-content/uploads/2014/12/2010-SCI-069-Cataract-Surgery-Guidelines-2010-SEPTEMBER-2010.pdf>

¹⁰ <https://www.rcophth.ac.uk/2017/10/nice-releases-new-cataract-surgery-guidelines/>

Table8 : predicted change for cataracts, by Scotland and Health Board areas.

	2016	2020	2025	2030	% Change
SCOTLAND	54,250	60,340	67,520	77,540	+43%
NHS Ayrshire & Arran	4,320	4,820	5,430	6,170	+43%
NHS Borders	1,440	1,640	1,850	2,160	+50%
NHS Dumfries & Galloway	2,010	2,220	2,480	2,780	+38%
NHS Fife	3,890	4,380	4,960	5,750	+48%
NHS Forth Valley	2,990	3,410	3,880	4,490	+50%
NHS Grampian	5,570	6,240	7,010	8,150	+46%
NHS Greater Glasgow & Clyde	10,610	11,460	12,440	14,040	+32%
NHS Highland	3,830	4,320	4,930	5,670	+48%
NHS Lanarkshire	6,210	6,970	7,860	9,040	+46%
NHS Lothian	7,740	8,610	9,700	11,320	+46%
NHS Orkney	260	300	350	400	+54%
NHS Shetland	240	270	320	380	+58%
NHS Tayside	4,780	5,280	5,840	6,650	+39%
NHS Western Isles (Eilean Siar)	370	410	450	510	+38%

Table 9: predicted change for cataracts, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% change
WESTOF SCOTLAND	21,140	23,250	25,730	29,250	+38%
East Dunbartonshire	1,320	1,500	1,680	1,900	+44%
East Renfrewshire	1,040	1,140	1,270	1,450	+39%
Glasgow City	4,740	4,960	5,230	5,850	+23%
Inverclyde	880	960	1,050	1,180	+34%
Renfrewshire	1,770	1,960	2,180	2,480	+40%
West Dunbartonshire	860	940	1,030	1,180	+37%
North Lanarkshire	2,960	3,340	3,760	4,330	+46%
South Lanarkshire	3,250	3,630	4,100	4,710	+45%
East Ayrshire	1,280	1,430	1,610	1,840	+44%
North Ayrshire	1,560	1,750	1,980	2,260	+45%
South Ayrshire	1,480	1,640	1,840	2,070	+40%

All NHS Health Boards in Scotland are expected to see increases the number of people with cataracts. The highest increase is expected in NHS Shetland and the lowest in NHS Ayrshire and Arran.

The West of Scotland is estimated to increase by 38%, with Glasgow city seeing the lowest increase and North Lanarkshire the highest.

Glaucoma

Glaucoma refers to a group of conditions with heterogeneous causes that result in damage to the optic nerve head and loss of visual field. It is usually, but not always, associated with an increase in intraocular pressure (IOP) above the normal value—usually estimated at 21 mm Hg (mean 15.5, ± 2 standard deviations, range 10-21). Primary open angle glaucoma is the most common type of glaucoma, accounting for over 70% of cases. It is an IOP related optic neuropathy that gives rise to characteristic optic disc changes and visual field loss. In its early stages it affects peripheral visual field only, but as it advances it results in loss of visual acuity and can cause blindness. Some patients with statistically normal IOP develop the characteristic changes associated with open angle glaucoma and are said to have low tension or normal pressure glaucoma.

Risk factors for primary open angle glaucoma are increasing age and IOP, black ethnicity, history in a first degree relative, myopia, and diabetes.

In the United Kingdom, the management of patients with glaucoma constitutes a major part of ophthalmologists' workload, accounting for 23% of all follow-up attendances to the UK hospital eye service. In the NHS there are more than one million glaucoma related visits per year. In the UK, glaucoma is the second most common cause for registration of visual impairment, accounting for 9-12% of registrations in people over the age of 65 years¹¹

Medical, laser, and surgical options are available for lowering IOP. The National Institute for Health and Care Excellence and other advisory bodies have developed guidelines to inform treatment pathways for glaucoma.¹²

¹¹ http://www.bmj.com/bmj/section-pdf/187924?path=/bmj/346/7912/Clinical_Review.full.pdf

¹² <https://www.nice.org.uk/guidance/ng81>

Table 10: predicted change for glaucoma, by Scotland and Health Board areas.

	2016	2020	2025	2030	% change
SCOTLAND	52,480	53,960	55,840	57,170	+9%
NHS Ayrshire & Arran	3,760	3,790	3,820	3,830	+2%
NHS Borders	1,200	1,220	1,240	1,250	+4%
NHS Dumfries & Galloway	1,560	1,570	1,580	1,570	+1%
NHS Fife	3,640	3,710	3,810	3,890	+7%
NHS Forth Valley	2,970	3,050	3,150	3,240	+9%
NHS Grampian	5,680	5,930	6,250	6,490	+14%
NHS Greater Glasgow & Clyde	10,870	11,180	11,570	11,780	+8%
NHS Highland	3,310	3,360	3,430	3,460	+5%
NHS Lanarkshire	6,440	6,530	6,640	6,710	+4%
NHS Lothian	8,220	8,670	9,180	9,610	+17%
NHS Orkney	230	230	240	250	+9%
NHS Shetland	230	240	250	260	+13%
NHS Tayside	4,080	4,190	4,390	4,540	+11%
NHS Western Isles (Eilean Siar)	290	290	290	290	0%

Table 11: predicted change for glaucoma, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% change
WEST OF SCOTLAND	22,430	22,840	23,340	23,590	+5%
East Dunbartonshire	1,070	1,070	1,080	1,070	0%
East Renfrewshire	890	910	930	950	+7%
Glasgow City	5,510	5,780	6,120	6,340	+15%
Inverclyde	800	790	780	750	-6%
Renfrewshire	1,720	1,750	1,780	1,800	+5%
West Dunbartonshire	880	880	880	870	-1%
North Lanarkshire	3,270	3,320	3,370	3,400	+4%
South Lanarkshire	3,170	3,210	3,270	3,310	+4%
East Ayrshire	1,220	1,240	1,260	1,270	+4%
North Ayrshire	2,730	2,710	2,680	2,630	-4%
South Ayrshire	1,170	1,180	1,190	1,200	+3%

The number of people living with glaucoma is predicted to increase by 9% in Scotland, with the greatest increase in NHS Lothian and 0% increase in Eilean Siar. However, in local authorities there is a mixed picture, with Inverclyde predicted to decrease by 6% and Glasgow City increase by 15%.

Diabetic retinopathy

Diabetic retinopathy is the retinal consequence of chronic progressive diabetic microvascular leakage and occlusion. It is the most common form of eye disease amongst individuals with diabetes mellitus. UK wide population-based estimates, by the RNIB, suggest that 56% of those with type 1 diabetes and 28.3% of those with type 2 diabetes have diabetic retinopathy. Risk factors for diabetic retinopathy include, type of diabetes, time since diagnosis, male, and being from a South Asian community. The obesity epidemic and ageing population are likely to have an impact on the prevalence of diabetic retinopathy.

If untreated, diabetic retinopathy leads to blindness, and is one of the most common causes of sight loss in people of working age. Compared to the general population, the risk of developing cataracts or glaucoma is doubled amongst individuals with diabetic retinopathy.

Screening for diabetic retinopathy is undertaken in Scotland via the National Screening Programme. Everyone with diabetes aged 12 and over are invited once a year for an eye screen. Early detection of sight threatening diabetic retinopathy through screening, and subsequent treatment of those affected by laser photocoagulation, can substantially reduce the risk of visual loss. The Royal College of Ophthalmologists has developed guidelines on the management of diabetic retinopathy.¹³

The RNIB Data Tool reports on people at risk or living with sight loss due to diabetic retinopathy.

¹³ <https://www.rcophth.ac.uk/wp-content/uploads/2014/12/2013-SCI-301-FINAL-DR-GUIDELINES-DEC-2012-updated-July-2013.pdf>

Table 12: predicted change for diabetic retinopathy, by Scotland and Health Board areas.

	2016	2020	2025	2030	%Change
SCOTLAND	110,186	111,650	113,905	115,980	+5%
NHS Ayrshire & Arran	7,490	7460	7,440	7,390	-1%
NHS Borders	2,310	2,320	2,330	2,340	+1%
NHS Dumfries & Galloway	3,040	3,020	3,000	2,960	-3%
NHS Fife	7,410	7,510	7,660	7,800	+5%
NHS Forth Valley	6,080	6,190	6,350	6,460	+6%
NHS Grampian	13,846	14,140	14,595	15,040	+9%
NHS Greater Glasgow & Clyde	23,060	23,200	23,470	23,800	+3%
NHS Highland	6,470	6,510	6,550	6,550	+1%
NHS Lanarkshire	13,010	13,090	13,210	13,270	+2%
NHS Lothian	17,518	18,072	18,908	19,738	+12%
NHS Orkney	440	440	450	460	+5%
NHS Shetland	470	480	490	500	+6%
NHS Tayside	8,500	8,670	8,900	9,110	+7%
NHS Western Isles (Eilean Siar)	550	550	540	530	-4%

Table 13: predicted change for diabetic retinopathy, by West of Scotland and Local Authority areas.

	2016	2020	2025	2030	% change
WEST OF SCOTLAND	43,560	43,750	44,120	44,460	+2%
East Dunbartonshire	2,120	2,110	2,090	2,060	-3%
East Renfrewshire	1,800	1,830	1,850	1,860	+3%
Glasgow City	12,260	12,450	12,770	13,190	+8%
Inverclyde	1,590	1,540	1,500	1,440	-9%
Renfrewshire	3,510	3,510	3,520	3,530	+1%
West Dunbartonshire	1,780	1,760	1,740	1,720	-3%
North Lanarkshire	6,680	6,720	6,780	6,800	+2%
South Lanarkshire	6,330	6,370	6,430	6,470	+2%
East Ayrshire	2,460	2,460	2,470	2,480	+1%
North Ayrshire	2,730	2,710	2,680	2,630	-4%
South Ayrshire	2,300	2,290	2,290	2,280	-1%

While overall the number people at risk or living with sight loss due to diabetic retinopathy in Scotland is predicted to increase by 5%, variations can be seen between health boards and local authority areas. The largest increase is predicted to be in NHS Lothian by 12%; however, a decrease of 9% is predicted in Inverclyde.

Conclusion

The RNIB Data Tool suggests high prevalence of long term eye conditions in Scotland, with differences in prevalence by NHS Health Board and West of Scotland local authority area. These appear in keeping with what is known about the population distribution and demographics for those areas. Standardisation could be an important method to account for demographic differences by Health Board and local authority area; however, this was not possible with existing data. In addition, population based data from CVIs and/or eye tests could be a more valid method of assessing current and future prevalence. To assess whether there is evidence of unmet need in the population, data on presentation to services could be compared with the population estimates.

The prevalence of all long term eye conditions, and particularly age-related macular degeneration, is estimated to increase substantially over the next 13 years; therefore, it is important that models of care and health service planning takes account of these estimates. Another important consideration for health service planning would be the development of new techniques, for example: port delivery systems, implants, tropical treatments for cataracts and AMD, or gene therapies. These are likely to be more expensive in nature; however, would require a significant lead time to be included in NICE or the Royal college of Ophthalmology guidelines before being recommended in routine practice.



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