



THE COLLEGE OF  
OPTOMETRISTS

**Ophthalmic Public Health  
Research Project:  
Final Report**



December 2017

# Investigators

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# Contents

1. Summary
2. The Ophthalmic Public Health Research Fellowships
3. Aims and objectives
4. Background
5. The Ophthalmic Public Health Research Group
6. Approach and methods
7. Research activity
8. Research findings
9. Project outcomes
10. Research outputs
11. Further research
12. References

## Section 1: Summary

This report summarises the Ophthalmic Public Health Research Project funded by the College of Optometrists and undertaken by the Ophthalmic Public Health Research Group between April 2013 and December 2016.

The report provides background to the College's interest and involvement in ophthalmic public health, the rationale for funding two Ophthalmic Public Health Research Fellows, and summarises the research programme that was undertaken by the Fellows under the supervision of the Principal Investigator at the University of Leeds in collaboration with the College.

The report also provides a list of project outcomes and research outputs from this project.

## Section 2: The Ophthalmic Public Health Research Fellowships

In September 2012, the College of Optometrists' Research Committee approved funding for a two-year Ophthalmic Public Health Researcher Project. It was agreed that up to £160,000 would be awarded to fund at least one postdoctoral researcher to work over a period of two years to develop the evidence base in ophthalmic public health. The researcher(s) would be located within and managed by the Leeds Institute of Health Sciences at the University of Leeds, and work collectively as the Ophthalmic Public Health Research Group.

On 23 November 2012, the College issued an invitation for expressions of interest for a researcher (and College member) to work with the University of Leeds and the College on this project. The parameters of the invitation were left open to allow the appointed researcher to develop the project in collaboration with senior public health researchers at Leeds. Ten responses to the invitation for submissions were received from postdoctoral and postgraduate researchers. Six candidates were selected for interview.

Following the interviews in February 2013, two public health researchers were appointed: Dr Chris Davey MCOptom and Dr Sarah Slade MCOptom. As both wished to continue their previous research commitments (in a hospital and in primary care, respectively) both were appointed as Ophthalmic Public Health Research Fellows on a part-time basis for a period of two years beginning in the spring of 2013. For details of the membership of the Ophthalmic Public Health Group, see Section 5.

## Section 3: Aims and objectives

### Aims

The Ophthalmic Public Health Research Project aimed to deliver high quality research outputs in order to:

- improve the evidence base for optometric practice
- inform the development of optometrists' understanding of ophthalmic public health
- identify opportunities for optometry to provide public health data and provide evidence for the impact that effective use of such data can have on eye health
- examine specific public health issues within optometric practice, provide evidence of the scope and scale of these issues, and support potential solutions to them
- inform professional optometric and national eye health care policy.

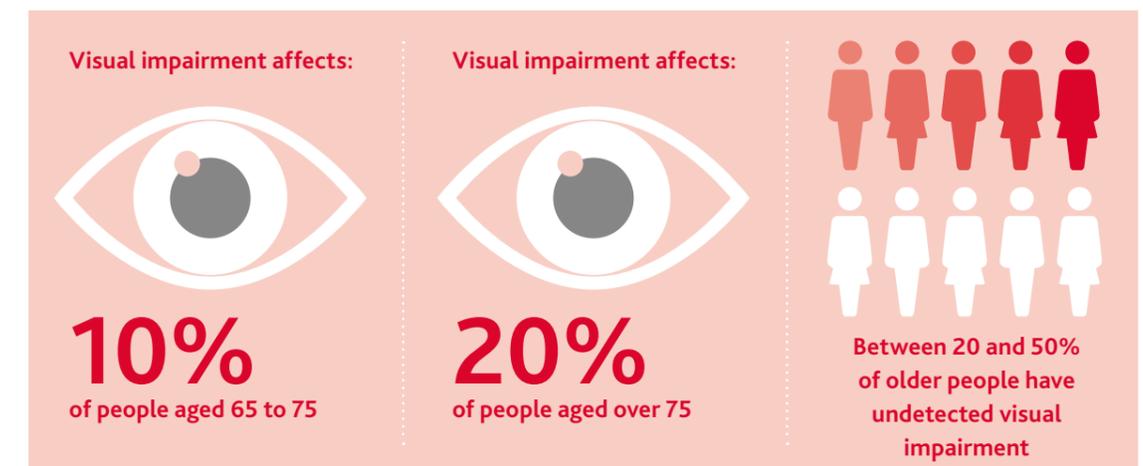
### Objectives

The objectives of the project set out in the contracted scope of work were to:

- review the current literature and available sources relating to ophthalmic public health data
- identify data sources that could be made available for analysis and carry out work required to facilitate / enable analysis
- produce new research based on relevant data sources (existing or prospectively acquired)
- develop collaborative research with appropriate groups, research centres, and researchers
- disseminate information, papers and reports relating to the data and research conducted.

## Section 4: Background

Eye health is a public health issue. Visual impairment affects about 10 per cent of people aged 65 to 75, and 20% of those aged 75 or older.<sup>1</sup> Between 20 and 50% of older people have undetected visual impairment and the majority of these have correctable problems due to refractive errors or cataracts.<sup>2</sup>



Furthermore, the age standardised prevalence of poor vision is significantly higher in deprived areas, with the main contributing disorders being refractive error and cataract. Visual impairment in older people is associated with reduced quality of life and increased risk of falls / accidents.



In November 2011, a coalition of optical bodies across the UK published *An optical sector strategy to improve ophthalmic public health*. The aims of this strategy were agreed at a Public Health Round Table convened by the College of Optometrists in June 2011 and reviewed and updated at a second Round Table held in October 2012, and a third in October 2013. A key output of these events was the publication, *Healthy eyes for all: an optical sector strategy to improve ophthalmic public health* (November 2011; revised and updated April 2014).

*Healthy eyes for all* identified three priority areas for the optical sector:

- **Knowledge:** how can we build the evidence base for ophthalmic public health and how can we improve the use of data?
- **Capacity:** how can we expand the ophthalmic public health workforce and help it to work effectively?
- **Communication:** how can we improve communication among those interested in ophthalmic public health and how can we engage public health professionals on ophthalmic issues?

Under the priority area of Knowledge, the 2011 strategy identified two next steps that could help overcome challenges with data collection to enable the optical sector to build the evidence base for ophthalmic public health:

- To establish a project to pull together existing evidence from local needs assessments and effective and efficient interventions in ophthalmic public health and highlight gaps for future research.
- To establish a project with public health specialists and epidemiologists to explore the potential use of existing data and how much more can be made available for research and evidence. This would also consider what data could be collected in the longer term.

The Ophthalmic Public Health Research Project was envisioned to enable the College to target specific research that would be of use in engaging with government and policymakers and to support College members locally in similar engagement activities with commissioners.

## Section 5: The Ophthalmic Public Health Research Group

The Ophthalmic Public Health Research Group consisted of the following members:

### Public Health Research Fellows appointed by the College of Optometrists:

1. Dr Chris Davey, PhD BSc (Hons) MCOptom, Research Optometrist
2. Dr Sarah Slade, PhD BSc (Hons) MCOptom, Research Optometrist

Responsibilities: to undertake the day-to-day management of the research, including:

- managing the data collection from routine sources in primary and secondary care (including clinical outcomes)
- managing randomisation and experimental data collection from the proposed trial arms of the research
- undertaking necessary statistical analysis under the guidance of Professor Shickle and Dr Farragher
- facilitating data collection, entry and handling
- undertaking other relevant analyses on data and literature.

### Supervisor / Principal Investigator:

Professor Darren Shickle, Professor of Public Health and Head of the Academic Unit of Public Health at the Leeds Institute of Health Sciences, University of Leeds

Responsibilities: to lead the project and ensure that all milestones are met, and collaborate with the College Research Team to liaise with external bodies and recruit and supervise the researchers.

### Research staff:

Dr Tracey Farragher, Lecturer, Public Health Epidemiology, Leeds Institute of Health Sciences, University of Leeds

Professor Shickle and Dr Farragher agreed to undertake to:

- provide guidance, advice, and where appropriate, training to the researchers in relation to public health research
- provide support and oversight to the project in relation to the design and development of specific research programmes, activities and methodology
- contribute to the management of data collection and analysis
- support and contribute to the production of reports, papers and presentations relevant to the research activities associated with the project.

### Other staff (non-research):

David Brennan, Academic Support Secretary, Faculty of Medicine and Health, University of Leeds.

## Section 6: Approach and methods

### In order to address the aims and objectives, a variety of approaches and methods was used, including:

- reviewing existing published evidence in the literature
- utilising existing data sources
- prospective research to collect relevant data not otherwise available.

While there are often criticisms of availability of data in the context of eye health, before embarking on collection of primary data, the Leeds Ophthalmic Public Health team explored the utility of existing data sources. Analysis of existing data sets might provide quicker answers at lower cost, provided the data is of sufficient quality and relevance to address the public health question. Secondary data includes data that is readily available in the public domain as well as data that can be accessed via data sharing agreements with data controllers.

### Examples of routinely available data include:

- Optometric work force activity under a General Ophthalmic Services (GOS) contract via the former Health and Social Care Information Centre (HSCIC). The HSCIC was re-branded as NHS Digital on 1 August 2016. (<https://www.digital.nhs.uk/>)
- Rates of Certificates of Vision Impairment issued in localities in England via the Public Health Outcomes Framework ([www.phoutcomes.info](http://www.phoutcomes.info))

### There can however be limitations with routinely available data in terms of:

- **Data items contained:** Data sets will be structured according to the purpose for which it was collected and hence may not allow comparisons within analysis for another public health question. GOS forms were designed for optometrists to claim sight test fees, and important data for public health analysis (e.g. ethnicity) are missing because the ethnicity of the patient is not needed for the NHS to pay a GOS claim.
- **Geographical availability:** For example, the data may only be published at national or regional level, instead of local authority or smaller areas. This is a significant problem with the published GOS data as it is mainly based on a sample of GOS forms (as most GOS forms are only in paper format) and is not routinely published at small area level to allow analysis on inequalities between communities.
- **Frequency of publication:** For example, Blind and Partially Sighted Registration data is only published by NHS Digital every three years, which restricts the ability to analyse trends.
- **Data quality:** For example, Blind and Partially Sighted Registration data can vary significantly from one publication date to the next if the local authority has reviewed its register in the intervening time to remove patients who have died or are no longer resident in their area. It is also important to consider the reliability of data available from some sources, especially online, to check if sources are promulgating data for particular self-interests, with analysis providing a biased perspective on an issue.

- **Scope for linkage with other data sets:** Optometrists usually do not have access to the NHS Number which is unique to individual patients. Thus records within community optometric practices, even if they were in the public domain, cannot be linked to other health records. Linkage is important to join up data sets to permit more complex and longitudinal analysis e.g. to follow patient trajectories between primary and secondary care.
- **Other data limitations:** The National Eye Health Epidemiological Model (NEHEM) ([www.eyehhealthmodel.org](http://www.eyehhealthmodel.org)) is a tool to provide data on incidence of eye diseases in the UK, as the routinely available data is mainly on access of services. However, the data on which it is based is now relatively old and is derived from population cohorts elsewhere in the world which might not reflect the UK population structure.
- **The Local Optical Committee Support Unit (LOCSU): Atlas of Optical Variation** (<http://www.locsu.co.uk/community-services-pathways/community-services-map>) provides a useful snapshot of which localities have particular community eye care pathways not otherwise covered by GOS contracts. However, the data on the website may be out of date if LOCSU do not update it on a regular basis. In any case, further enquiry (via LOCSU, local providers or healthcare commissioners) would be needed to get further information about the nature of what services do or do not cover to compare provision and inequalities between areas.

Thus in addition to using published data sources, the Leeds Ophthalmic Public Health Group also sought out access to other data sources not routinely available. While it is always necessary to consider quality of data and to be careful of over interpretation, it is usually better to have access to raw data, ideally at individual or small area level, rather than data that has already been partially or fully processed. Such access might require data sharing agreements to ensure that data protection measures are in place.



## Section 7: Research activity

At the start of the project it was anticipated that individual sub-projects would be developed following the review of data sources and consultations on indicators and research priorities. The six phases of primary research activity, together with a number of secondary areas of work, supported the project's overall aim to develop evidence-based recommendations to underpin policy on eye services in the UK.

### Research Phase 1: Project development and planning (2013)

In February 2013, the College Research Committee was presented with 11 potential areas for the Ophthalmic Public Health Group to investigate. These were in line with the three priority areas identified at the Public Health Round Table in June 2011 and with the College's overall Strategic Plan 2011-2014. The 11 areas are listed below. It was agreed that upon appointment, the research fellows would review the proposed areas and develop a project plan in collaboration with the College and the team at Leeds.

1. **Sight test intervals:** To investigate the frequency and entitlement for eye examinations across the UK, including differences in recommended frequency of testing in England and Scotland.
2. **Interventions to increase uptake of eye examinations:** To explore the feasibility of not-for-profit eye testing services located within deprived communities that are not currently well-served by optometrists.
3. **Wide variation in non-attendance rates for diabetic retinopathy treatment across England:** Further research to identify who does not attend diabetic retinopathy screening (DRS) and / or treatment, and why.
4. **Epidemiology of visual impairment and dementia:** In response to the Government's national challenge on dementia, conduct research to address questions related to the epidemiology of visual impairment with dementia.
5. **Epidemiology of visual impairment and risk of falls:** Conduct research to address questions related to the epidemiology of visual impairment and risk of falls. Non-elective admission data includes information recorded on whether or not the patient has a visual impairment.
6. **Impact of community-based enhanced schemes within eye care:** Further evaluation of enhanced services is needed to assess effectiveness in reducing false-positive referrals to secondary care and stress and inconvenience for patients.
7. **Epidemiology of late presentation for glaucoma:** A glaucoma equity profile for Leeds using secondary analysis of electronic patient records revealed significant associations between 'late presentation' and older age and living in an area of high deprivation. Have enhanced schemes for glaucoma referral refinement reduced the incidence of late presentation for glaucoma?
8. **Epidemiology for diabetic macular oedema:** Diabetic macular oedema (DMO) is a leading cause of decreased vision from diabetic retinopathy. The literature on DMO has a number of gaps and limitations, including poor data on ethnicity and the duration of diabetes, and whether these factors impact on outcomes.
9. **Evidence base for organisation of hospital eye services:** A systematic literature review is required to assess whether network or tier arrangements used in other areas of specialist care would help reduce inequalities in outcomes following eye care.

**10. Children's vision and screening:** A review of current evidence to inform the development of a risk profile / guidance for determining visual development profiles for children could be combined with a review of screening programmes for children generally.

**11. Review of ophthalmic public health data:** There is no single source that describes relevant data sources. It would be useful to define and review the primary and secondary data sets available, mapping primary data sources by type of source, database, location, and content. Then it may be possible to develop prospective research on exemplar data sets to demonstrate how electronic data can be used to inform public health planning and impact assessments. Evidencing the benefit of electronic eye health records to public health could be used as a tool to drive change in data management in eye care.

Following the appointment of the two research fellows, the Ophthalmic Public Health Research Group undertook an initial review of available sources and literature and the project aims and objectives. It was agreed with the College that the project would initially focus on the evidence base for sight test intervals.

### Research Phase 2: Literature review (2013-15)

Initially, the review focused on the available literature on the epidemiology of eye conditions. The aim was to determine whether evidence could be found to support robust recommendations on the frequency of sight tests.

The search centred on the biggest causes of visual impairment: refractive error, cataracts, glaucoma

and macular degeneration. Diabetic retinopathy was not included as it was already the subject of a national screening programme. Using the search terms 'epidemiology,' 'incidence,' and 'prevalence,' the researchers began searching for 'refractive error' and 'cataract'. A total of 2,218 papers on refractive error and 4,002 papers on cataract were identified for review. Of these, 2,018 refractive error papers and 557 cataract papers were selected, reviewed, and information on each was entered into a database.

The researchers determined that the type of information they were searching for was not readily available. The availability of the literature was limited by the following factors:

- The majority of available population-based studies are cross-sectional rather than longitudinal or cohort studies. It was difficult to differentiate genuine changes in the condition due to ageing from other differences in the sample populations in each age group.
- There was little UK-based literature. For example, it was difficult to ascertain to what extent the findings in populations in Africa or Australia may be applied to the UK population.
- There was limited data on 16 to 40 year olds.

A similar attempt to examine the evidence for sight test intervals in Canada<sup>3</sup> also noted gaps in the literature and developed a view based on professional consensus as the literature did not support a more rigorous approach.

An initial search of the literature on the epidemiology relating to sight testing and refractive error concluded that there was only very limited evidence available to support ophthalmic public health initiatives.

### Research Phase 3: Principles for a public health eye care model (2013-2014)

One of the first outputs of the Ophthalmic Public Health Research Project was the paper, 'Why is the GOS Contract that underpins primary eye care in the UK contrary to the public health interest?' (*British Journal of Ophthalmology*, October 2014). This paper is a critique of the GOS contracts within the UK, and the authors argue that aspects of the way the GOS contract is implemented are contrary to the public health interest, and that different approaches are needed to address eye health inequalities and to reduce preventable sight loss.

The authors cite the preventable sight loss indicator within the Public Health Outcomes Framework for England (2013), the eye health strategy documents in Wales (2013) and Northern Ireland (2012) and the 2006 GOS Contract in Scotland all as evidence for the recognition of the importance of eye health. While the purpose of the paper is not to advocate any particular model for delivery of eye care that should be adopted by every country, the authors encourage a review of the model currently in place against the following proposed public health principles:

1. Getting the right patient, in the right place, at the right time to facilitate appropriate access, especially by higher-risk individuals, for early detection / treatment of preventable sight loss. This requires addressing barriers arising from unintended consequences of the GOS contract.
2. Utilising the right staff, with the right skills and equipment, at the right point in the eye care pathway. The UK has a well-trained eye health workforce. Significant changes to the GOS contract and shifts of activity may be destabilising, but there are benefits from matching services more appropriately to workforce expertise.

3. Generating the right data, of the right quality, used by the right person to facilitate timely and effective communication across the eye care pathway but also to provide data to evaluate success at achieving public health targets.

### Research Phase 4: Evaluation of sources for sight test data (2014-15)

Following a discussion of early findings with the College, it was agreed that further literature searches were unlikely to yield the information required to support robust recommendations on the frequency of sight tests. Therefore, the focus of the project shifted towards the investigation of other data sources, including the feasibility of collecting prospective UK sight test data.

The Ophthalmic Public Health Research Group evaluated various data sets to determine to what extent current data would support analyses useful to public health research.

Comprehensive data on sight test activity and its clinical outcomes in the UK is not generally available. NHS Digital data from GOS sight tests provides limited data on patient eligibility and none on the outcomes of sight tests.<sup>4</sup> As demonstrated by the LOCSU Atlas of Optical Variation, there is a plethora of local enhanced services delivered by community optometrists across England (<http://www.locsu.co.uk/community-services-pathways/community-services-map>). However, published data on the performance of these services is relatively scarce. Where information is available it is often focused on a single eye condition rather than the interactions between multiple services.

The possibility of obtaining suitable UK-based data from electronic systems in optometric practice was explored. This included looking at the possibilities of acquisition of data from multiple practices and from internet storage systems.

The findings of this exploration were presented at the October 2013 Ophthalmic Public Health Round Table. In brief, many of the larger optical retailers, including Tesco, Asda, and Scrivens did not hold clinical data in electronic systems at all. Where electronic systems were in use, information was not stored in a way that was conducive to research analysis. For example, Specsavers data was stored by patient, but not by individual episodes that would allow a longitudinal study of changes in refractive error and incidence of eye disease. The Outside Clinic database was more structured, but as a specialist provider of domiciliary eye care their data was limited to the GOS additional contract, with only older, housebound patients included.

The Ophthalmic Public Health Research Group was given access to the Optix patient database which contained over 3 million sight test episodes conducted in independent practices. However, the data entry on simple parameters was inconsistent. For example, visual acuity was recorded variously as Snellen 6/6 or 6; LogMAR 0.0 or Decimal 1.0. There was no guide to which notation had been used by a particular practice. This compromised the researchers' capacity to interpret the data from this source.

Therefore the Ophthalmic Public Health Research Group concluded that further work was required to develop a proposal for a minimum data set for primary optometric care.

### Research Phase 5: Minimum data set protocol (2014-16)

The researchers developed a protocol in order to determine whether it was feasible to define a minimum data set of metrics that may be extracted from primary care optometric systems for research purposes.

The aim was to investigate:

- the type of data required
- the capability of electronic systems to collect this data
- the level of data currently input by optometrists.

This phase of work has produced two publications to date. The first research paper published was titled 'Can data in optometric practice be used to provide an evidence base for ophthalmic public health?' (*Ophthalmic & Physiological Optics*, July 2016). The purpose of this paper was to investigate the potential of using clinical primary care optometry data to support ophthalmic public health, research and policymaking. It ultimately found that although there were plenty of electronic data in optometric practice, this was highly variable and often not in an easily analysed format. The paper recommended a UK-based minimum data set containing standardised clinical information in order to facilitate analysis of the evidence for public health purposes. To ensure effective planning of future public health interventions, the data set would need to capture information from all sectors of the population, including both NHS sight tests and privately funded sight tests.

The researchers found that much of the data of interest to public health research is already input in optometric practices, but that the data format is variable and often in free text, so it may not be easily extracted for analysis. As part of their investigation, the public health researchers contacted electronic patient record (EPR) software providers, at least some of whom indicated that they may be willing to modify their systems to accommodate a data set. There is recognition that although some data may be easily coded using drop-down menus, others (for example, visual fields) may be more difficult to incorporate and would require further discussion before they could be included.

The second paper was published in *Ophthalmic & Physiological Optics* in May 2017. This paper, 'A proposed minimum data set for international primary care optometry: a modified Delphi study,' aimed to identify a minimum list of metrics of relevance to public health, research and service development which could be extracted from practice management systems and electronic patient records in optometric practice.

The metrics that may be recorded as being part of a primary eye exam were categorised by their importance to research using results from a survey of vision science and public health researchers. A consensus regarding inclusion and response categories was achieved for nearly all metrics, and a recommendation was made of 50 metrics which would be appropriate in a minimum data set. The public health researchers concluded that the data set could be easily integrated into clinical practice yet allow vital data to be collected from primary care. It should not be mistaken for a clinical guideline and should not add to the workload of the optometrist and a pilot study prior to implementation was recommended.

### Research Phase 6: evolutio (2014-16)

In 2014, the College entered into a data and information sharing agreement with NHS England, evolutio Care Innovations Limited (a provider of integrated care software solutions), and the University of Leeds. This agreement provided for the restricted use of the GOS claim data from over 2.25 million patient records from the Essex and Suffolk NHS area teams across a four year period.

The independent capture of GOS form data by evolutio, on behalf of NHS area teams (Essex and Suffolk) has facilitated a comprehensive, area wide data set which has the potential to provide insight into public access to eye healthcare and offers an opportunity for further ophthalmic public health research. The evolutio data set is unique in that unlike NHS payments systems, it captures all the data fields on the GOS forms including sight test outcomes.

The researchers discussed with evolutio the various databases that they control and how patient data may be used to investigate public eye health. Evolutio software systems include:

- **eClaim** - which collates data on GOS sight test bands for spectacle vouchers submitted for payment
- **eRefer** - which provides optometrists with bespoke referral software, including an enhanced decision support tool to manage referrals
- **eValueate** - which allows remote access to test results and patient records for use by clinicians triaging referrals or managing patients in community clinics.

Detailed information on what happens to referrals initiated on completion of GOS sight tests via the eReferral and eValueate systems analysis of the data could significantly contribute to the current knowledge of access to eye health and the direct effects of various activities within the GOS on both patient care outcomes and the public health economy.

The Ophthalmic Public Health Researchers were given access to the GOS data held in the eClaim system, which was used to run a small area analysis of sight tests uptake versus indices of multiple deprivation in Essex in a similar way to analysis that had previously been completed on data from Leeds and Manchester.

The Leeds data showed a relationship between deprivation and low uptake of GOS sight tests<sup>5</sup>, but this was not replicated in the Manchester data. It was hoped that the inclusion of the Essex area might assist in the wider interpretation of the relationship between socioeconomic deprivation and inequalities in uptake. It might also highlight possible differences between urban areas like Leeds and Manchester and more rural parts of Essex.

The analysis of evolutio data has produced one published research paper to date, 'Geographical inequalities in uptake of NHS funded eye examinations: Poisson modelling of small area data for Essex, UK,' which was published in *Journal of Public Health* in June 2017. This follows the aforementioned small area analysis of the uptake of NHS-funded sight tests in Leeds, which showed significant inequalities in access among people aged <16 and ≥60 ('Geographical inequalities in uptake of NHS funded eye examinations: small area analysis of Leeds, UK,' *Journal of Public Health*, 2015).

The Essex data were extracted from 604,126 GOS1 claim forms for eye examinations conducted on Essex residents between October 2013 and July 2015. The inequalities in access among patients 60 years and over in Essex were not as large as those reported in the equivalent small area analysis in Leeds, although there were similar inequalities in under 16 year olds. However, demonstrable inequalities in this data set over a longer time period and a larger and more diverse area than Leeds, reinforce the argument that interventions are needed to address eye examination uptake inequalities.

## Section 8: Research findings

### Primary research findings

1. **Literature review:** The available literature on the epidemiology of eye conditions does not provide sufficient evidence to inform recommendations on the frequency at which sight tests should be performed.
2. **Analysis of public health data sources:** There is an increasing amount of clinical data held electronically in various optometric practice systems that would be of interest to researchers in optometry and public health.
3. **Using public health data sources for research purposes:** Current systems are not organised in a way that allows for interrogation of the data for research purposes.
4. **Format of public health data sources:** The format(s) of the data held are such that data may not be easily analysed even if it is possible to extract the data from a system. Much of the data available is in free text rather than organised menus.
5. **Minimum data set metrics:** The researchers have described a minimum data set that would be of use for public health research if they could be extracted from optometric practice systems in a way that may be readily analysed.
6. **Coding minimum data set metrics:** The research group has indicated how many of the metrics may be coded to provide useful outputs for research and highlighted areas where it may be difficult to code data.

## Section 9: Project outcomes

### Primary project outcomes

In summary, the outcomes of this project were:

- improved understanding of the sources of public health data, including an evaluation and reporting of these sources
- mapping gaps in current data and indicating potential new data sources or fields to fill the identified gaps
- a determination of whether there is adequate data to produce a sound, evidence-based approach to determining recall intervals for sight tests.
- improve information available to eye health professionals
- facilitate comparative clinical audit and evaluations to inform practice
- support effective feedback to professionals
- enable better value for the NHS and the patient
- support the optimisation of the use of resources
- support the equalities agenda.

Given these outcomes the Ophthalmic Public Health Research Group has proposed further research that might improve the capacity to:

### Secondary project outcomes: communication and supporting related projects

In addition to evaluating various data sets to determine to what extent current data would support analyses useful to public health research, the Ophthalmic Public Health Research Group has undertaken additional work in four areas to connect and communicate with other researchers and stakeholders with an interest in ophthalmic public health.

#### 1. Manchester GOS data

The researchers built upon existing links with NHS England in order to access a database of approximately 400,000 GOS sight tests from an area covering seven out of 10 former Primary Care Trust (PCT) areas of Greater Manchester. Dr Tracey Farragher, Public Health Epidemiologist at the University of Leeds, conducted an analysis of the uptake of sight tests compared with the Index of Multiple Deprivation (IMD) in these areas. Professor Darren Shickle and Dr Farragher presented the early findings of this research to a meeting of the Greater Manchester Local Eye Health Network (LEHN) GOS Working Group. The data provided is currently being used by the Greater Manchester LEHN to help target the most appropriate areas for the public health promotion of sight tests uptake by children and adults.

#### 2. Testing Eyes in Non-Traditional Settings (TENTS) 2 Eye Check Project

The original TENTS project was set up to try to increase the uptake of sight tests in deprived areas of Leeds. It was prompted by data published by the former HSCIC that showed that the uptake of sight tests in Leeds was less than in other parts of the Yorkshire and Humber region.

The TENTS Phase 2 Eye Check project (2015) was a proof of concept study that was based on the provision of eye examinations in socio-economically deprived communities by a trained optometrist but with no sales of spectacles involved. The Ophthalmic

Public Health Research Group provided clinical advice and support to the Eye Check project.

Eye Check included a vision screening protocol and a patient questionnaire (including history of the patient's eye conditions and eye care received to date), and the development of a public engagement campaign. This project provided an opportunity to collect data in a population that may not normally access health services. The initial Eye Check pilot provided in community locations and a GP practice produced mixed results.

#### 3. Eye care for ethnic minorities

The journal *Optometry in Practice* commissioned an article by the Ophthalmic Public Health Research Group for its special edition on public health (October 2014). The article, 'Eye care for ethnic minority groups in the UK,' highlighted the higher prevalence of eye disease in the non-white population of the UK and the lack of awareness of increased risk and reduced uptake of eye care services which means sight loss is more prevalent. The authors asserted that optometrists have an important role to play in raising awareness of eye health and encouraging uptake in minority populations.

#### 4. The need for a confidential enquiry for the eye care pathway

In a letter to the editor published in *Ophthalmic & Physiological Optics* (September 2015), Professor Darren Shickle highlighted the limitations of the literature supporting the assertion that 50 per cent of sight loss is preventable. The letter proposed that a confidential enquiry into how patients arrive at end stage sight loss could reveal the elements of the eye care pathway where improvements in care could help to achieve the goal of prevention of blindness. This enquiry would also help estimate the proportion of patients with irreversible sight loss where visual impairment could have been prevented.

## Section 10: Research outputs

### Published articles

D Shickle, TM Farragher, CJ Davey, SV Slade, J Syrett (2017). Geographical inequalities in uptake of NHS funded eye examinations: Poisson modelling of small area data for Essex, UK. *Journal of Public Health* 2017: 1-9. <https://academic.oup.com/jpubhealth/article-lookup/doi/10.1093/pubmed/fox058>

CJ Davey, SV Slade, D Shickle (2017). A proposed minimum data set for international primary care optometry: a modified Delphi study. *Ophthalmic & Physiological Optics* 37: 428-439. <http://onlinelibrary.wiley.com/doi/10.1111/opo.12372/full>

SV Slade, CJ Davey, D Shickle (2016). Can data in optometric practice be used to provide an evidence base for ophthalmic public health? *Ophthalmic & Physiological Optics* 36: 503-511. <http://onlinelibrary.wiley.com/doi/10.1111/opo.12291/full>

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### Presentations

D Shickle: 'Why are the current models that underpin primary eye care in the UK contrary to the public health interest?', Faculty of Public Health Conference, Gateshead, UK, June 2015

CJ Davey: 'Prevention, Including Access: Primary Eye Care', National Optical Conference, Birmingham, UK, November 2014

D Shickle, SV Slade, CJ Davey: 'Uncorrected refractive error in deprived areas – overview presented to ophthalmic public health round table', London, UK, October 2013

## Section 11: Further research

As noted above, the Ophthalmic Public Health Research Group found that comprehensive data on sight test activity and its clinical outcomes in the UK is not generally available. The proposed minimum data set requires further work to confirm metrics, the way that they are classified and usability in clinical practice.

The national optometry contracting lead for NHS England has expressed interest in independent analysis of GOS sight test data, particularly in relation to sight test outcomes regarding referral and prescribing rates. This would require further exploration of the evolutio datasets. For public health purposes, such analysis could yield valuable information about the prevalence of refractive error and pathology for different age groups, particular social circumstances and geography.

Analysis of local enhanced services by community optometrists managed by evolutio could help provide further data on the likely health outcomes in the particular communities under consideration and the potential wider benefits to the population as a whole.

The Ophthalmic Public Health Research Fellows have identified four areas for the College to consider for further research in ophthalmic public health:

1. Using the results of the research into a minimum data set for primary eye care to develop ophthalmic public health policy and implement the pilot of the minimum data set.
2. Undertaking further analysis of the evolutio GOS data set in order to better understand the uptake and outcomes of NHS sight tests from a public health perspective.
3. Examining the data from the evolutio eRefer and eEvaluate data sets in order to look at the benefits to eye health of using the combination of enhanced community and secondary care services.
4. To explore in more detail alternative models for delivery of primary optometric care based on the public health principles outlined in Research Phase 3.

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