Statistical Analysis Plan for the NOD Cataract Audit

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The master copy of the document can be found in the RCOphth shared drive

Version History

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Contents

1 Abbreviations

Abbreviation	Description
AC	Anterior chamber
CDVA	Corrected distance visual acuity
CF	Count fingers
CQC	Care Quality Commission
DHCW	Digital Health and Care Wales
DR	Diabetic Retinopathy
EMR	Electronic Medical Record
GIRFT	Getting It Right First Time Programme
GMC	General Medical Council
HM	Hand movements
IMD	Index of multiple deprivation
IOL	Intraocular lens
LogMAR	Logarithm of the Minimum Angle of Resolution
NHS	National Health Service
NOD	National Ophthalmology Database
NPL	No perception of light
PCR	Posterior capsule rupture
PHVA	Pinhole visual acuity
PL	Perception of light
PMMA	Polymethylmethacrylate
RCOphth	Royal College of Ophthalmologists
UDVA	Uncorrected distance visual acuity
VA	Visual acuity
VEGF	Vascular Endothelial Growth Factor

2 Acknowledgment

The National Ophthalmology Database Audit (NOD) is conducted under the auspices of the Royal College of Ophthalmologists (RCOphth) and conducts the National Cataract Audit focussing on publically funded cataract surgery.

We acknowledge the support of the hospitals that are participating in the RCOphth NOD and thank our medical and non-medical colleagues for the considerable time and effort devoted to data collection. All participating centres are listed on the NOD website (www.nodaudit.org.uk).

We acknowledge with thanks the contribution of Professor John Sparrow who provided diligent clinical and academic oversight and leadership of the NOD over many years to bring it to its current stature. It is with gratitude that we remember the contribution of our friend and colleague Robert Johnston, who sadly died in September 2016. Without his inspirational vision, determination and career long commitment to quality improvement in ophthalmology this work would not have been possible

3 Introduction

The Royal College of Ophthalmologists (RCOphth) is the governing authority for the National Ophthalmology Database Audit (NOD) and conducts The National Cataract Audit on data concerning cataract surgery. The audit is open to providers of both National Health Service (NHS) and privately funded cataract surgery in England, Guernsey, Scotland, Northern Ireland and Wales. The data is collected as part of routine clinical care on electronic medical record (EMR) systems or in-house data collection systems and the analysis is performed by the RCOphth NOD Audit statisticians based in Cheltenham General Hospital.

This document concerns the statistical analysis plan for the prospective cataract audit analysis.

The initial methodology for the National Cataract Audit was established using a 'legacy' extract of historical data. This extract was also used for the completed feasibility studies into outcomes of wet age-related macular degeneration, trabeculectomy surgery & visual field preservation in eyes with glaucoma and rhegmatogenous retinal detachment surgery.

The 'legacy' cataract analysis was performed on retrospective data collected as part of routine clinical care and recorded on existing EMR systems, whilst the prospective audit analyses are performed on data collected on existing EMR systems and the RCOphth NOD commissioned audit tools, which started collecting data in September 2015 and are available to all centres that offer cataract surgery.

The RCOphth NOD receives data collected on multiple systems that can have different ways to record the information. For this reason, the terminology used in this document is the wording used in the supplied information.

4 Cataract Inclusion/Exclusion criteria

Eligibility for any cataract analysis

The definition of an eligible operation is constructed to include all cases in which the intention had been to undertake a phacoemulsification cataract extraction and lens implant as a standalone procedure (potentially accompanied by other adjuncts such as pupil stretching or injections of therapeutic substances that are either intrinsic to the cataract operation or are incidental additions which would not be expected to impact intra-operative complications, such as sub-tenons injection of triamcinolone for patients unable to instil their own anti-inflammatory eye drops post-operatively due to dementia).

Cataract operations are included in RCOphth NOD analyses if they comply with the conditions listed below; if not then they are excluded from cataract analyses;

- Operation performed in adults (aged 18 or above)
- Operation included a phacoemulsification procedure
- Operation has a recorded date of surgery
- Operative data includes a surgeon identifier
- Operative data includes a valid grade of surgeon
- Operation included a “cataract” indication for surgery*
- Operation without any of the ineligible cataract indications for surgery or diagnosis*
- Operation did not include any ineligible operative procedures*
- Cataract operations that included a pars plana vitrectomy with no vitreoretinal indication for surgery and no other vitreoretinal procedures except for sponge and scissor vitrectomy or automated anterior vitrectomy* (Phaco-vitrectomy for other indication is excluded, but cataract operations that ended up needing a vitrectomy remain eligible)

National Ophthalmology Database Cataract Audit specific criteria

For the national ophthalmology database audit of cataract surgery further criteria apply, these are;

- For named centre and named surgeon results, at least 50 eligible operations are required
- For published named surgeons a valid General Medical Council (GMC) number is required
- For post-cataract Vision Loss, both a preoperative and postoperative VA measurement is required, and there has to be <40% of operations with missing visual acuity data for a result to be produced for a centre or surgeon.

*Full details of the eligibility criteria can be found on the NOD website: www.nodaudit.org.uk

5 Index of multiple deprivation score

The Index of Multiple Deprivation (IMD) score, national ranks and national deciles are calculated during the data extraction. For patients treated in English centres, the English Indices of Deprivation 2019 (https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019) are used, and for patients treated in Welsh centres the Welsh Index of Multiple Deprivation 2019 (https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation) are used.

Reasons for missing IMD data are the non-recording of a patient's postcode on the hospital admission system, a patient's postcode not recognisable in the IMD conversions or no matching to deprivation data during data extraction.

The RCOphth NOD receives IMD data from centres using the Medisoft EMR. Centres using the Open Eyes EMR can submit IMD data depending on the version of Open Eyes they use, and providing this functionality is included in their versions data extraction process. The RCOphth NOD have created a document explaining how English centres using the EPIC EMR or an in-house database can calculate and submit IMD data for their patients. Currently there is no equivalent system for 'batch uploading' of postcodes to match to social deprivation data for Wales as there is for England, thus non-EMR enabled Welsh centres cannot submit this data.

The RCOphth NOD is conducting a test of implementing the granted section 251 support, and aspires to systematise extraction of the NHS number for all cases to permit tracking of complications presenting to providers other than the original surgical provider centre. This section 251 support will also permit future data extractions to include the patients' full post code and the matching to social deprivation data would be possible for all centres from regions where social deprivation data can be matched to a postcode.

6 Pupil size

Certain operative procedures are conducted on small pupils; thus, the recording of the procedures can infer the eye has a small pupil, these operative procedures are as follows;

- Broad iridectomy
- Insertion of iris hooks
- Insertion of pupil ring expander
- Sphincterotomy
- Stretching of the iris
- Synaechiolysis

7 Operative complications

On the supplying data systems to the RCOphth NOD, intra-operative complications are a mandated field. If a surgeon indicates that an intra-operative complication has occurred then on some systems, they have to select from a pre-populated list of complications specific to the type of surgery being performed, on other systems they record the intra-operative complication using free text.

Post-operative complications can be recorded in clinic, but not all centres using EMR systems have the EMR in use in all areas of the hospital eye service, and patients do not always return for follow up assessments, thus post-surgery data can be missing. Analysis is limited to post-operative complications recorded within 2 months of cataract surgery in centres that have recorded post-operative data, either 'none' or a specified post-operative complication. As not all post-operative complications are recorded in the 'postoperative complication' sections of EMR systems, or the patients could be seen in non-cataract clinics, inferences for the occurrence of selected postoperative complications are possible from diagnostic and treatment data. Full details on these inferences can be found on the NOD website (www.nodaudit.org.uk/healthcare-professionals/resources).

8 Posterior Capsular Rupture (PCR) definition

Posterior capsular rupture is defined as occurring if:

Any of the following intraoperative complications are recorded during surgery:

- IOL into the vitreous
- Lens fragments into vitreous
- Lens matter in posterior segment
- Nuclear/ epinuclear fragment into vitreous
- Nuclear matter in posterior segment
- PC rupture - vitreous loss
- PC rupture – no vitreous loss
- Vitreous loss
- Vitreous to the section at end of surgery
- Zonule rupture – vitreous loss

Or if any of the following occurred:

- The operation includes any of 'Sponge and scissors vitrectomy', 'Automated anterior vitrectomy' or 'Scleral fixed IOL'
- The operative procedure includes 'Fragmatome lensectomy ± IOL' with a combined phacoemulsification procedure*
- The operative procedure includes either 'Removal of lens fragments' or 'removal of lens nucleus' combined with a vitrectomy and phacoemulsification procedures*
- If any of 'lens matter in posterior segment', 'nuclear matter in posterior segment', 'vitreous to the section' or 'vitreous in the AC' are recorded within 8 weeks of cataract surgery, (including the day of cataract surgery). It is recognised that vitreous egress is possible in rare cases, despite the absence of compromise of the capsule or zonules. This still represents a complication of surgery, however EMR providers may offer a diagnosis of post-operative complication that identifies such cases of vitreous in the anterior chamber unrelated to intra-operative complication.
- If there is a record of a dropped nucleus operation with 90 days of cataract surgery, note this includes the day of cataract surgery in the time frame

*For these cases, if there is a recorded intraoperative complication of PCR the case is eligible for inclusion in the audit and allocated as PCR. If there is no recorded intraoperative complication of PCR, the case is excluded from the audit under the assumption of previous cataract surgery.

9 Visual Acuity criteria

Visual Acuity (VA) abbreviations

- Corrected distance visual acuity = CDVA
- Uncorrected distance visual acuity = UDVA
- Pin hole visual acuity = PHVA
- Count fingers = CF
- Hand movements = HM
- Perception of light = PL
- No perception of light = NPL

Preoperative VA

- Uses the VA measurement closest to the date of surgery, including the day of surgery and within 6 months prior to surgery.
- Uses the better of CDVA and UDVA. PHVA measurements are not eligible preoperatively

Postoperative VA

- Uses VA measurements within 8 days and 6 months (inclusive) of cataract surgery.
- Uses the best measurement of CDVA, UDVA or PHVA within the time period

For estimates of visual acuity for a contributing centre (i.e. the median preoperative VA), at least 50 eligible operations with VA measurements are required.

Postoperative Vision Loss

Postoperative Vision Loss is defined according to the difference between preoperative and postoperative VA as in Table 1.

Table 1: Postoperative Vision Loss classification.

Preoperative VA	Postoperative Vision Loss
<1.00 LogMAR	A loss of ≥0.30 LogMAR
≥1.00 to <CF	Postoperative VA of HM, PL or NPL
CF	Postoperative VA of PL or NPL
HM	Postoperative VA of NPL
PL	VA loss not considered
NPL	VA loss not considered

Severe Visual Loss

Severe Visual Loss is reported at the aggregate and centre level; this is unadjusted as no case complexity adjustment model has been created.

Postoperative severe visual loss is defined as a loss of ≥0.60 LogMAR between preoperative and postoperative VA measurement. This is only considered for eyes with a preoperative VA of HM or better, while for eyes with a preoperative VA of PL or NPL, severe visual loss is not considered.

10 Diabetic status

It is possible for an eye to have a record of diabetic retinopathy (DR) as an ocular co-pathology while the patient is not recorded as having diabetes mellitus, the DR ocular co-pathology data can therefore be used to infer diabetic status as follows;

For single eye operated patients, if the eye has a record of DR as an ocular co-pathology, then the patient can be considered to have diabetes mellitus.

For both eye operated patients;

- If the first operated eye has a record of DR as an ocular co-pathology, then the patient can be considered as having diabetes mellitus for both operations
- If the first operated eye has no record of DR as an ocular co-pathology, and the second operated eye does, the patient can be considered as having diabetes mellitus for the second cataract operation

11 Ocular co-pathology / known risk indicator

Ocular co-pathology / known risk indicators are a major component of case complexity adjustment and it is very important to record this data accurately. From centres that supply data for pre-cataract surgery diagnoses, assessments and treatments, certain ocular conditions can be inferred from these pre-cataract records.

Full details of the inferences of the various conditions can be found on the NOD website (www.nodaudit.org.uk/healthcare-professionals/resources).

12 Previous Anti-VEGF therapy

For centres recording data on EMR systems, the medication and treatment data prior to cataract surgery can be used to identify eyes receiving, and the number of injections of, anti-vascular endothelial growth factors (anti-VEGF) prior to cataract surgery. Centres using in-house databases can also supply this information. Medications classified as Anti-VEGF are as follows;

- Abicipar Pegol
- Aflibercept
- Bevacizumab
- Brolucizumab
- Conbercept
- Faricimab
- Ranibizumab

13 Anaesthesia

Anaesthetic technique is categorized according to a hierarchical structure of increasing invasive or advanced technique. In cases of multiple category allocations, the more invasive/advanced technique was considered to have been used.

Anaesthetic technique

- Topical anaesthesia alone
- Combined topical and intracameral
- Sub-Tenons
- Sharp needed (peribulbar/retrobulbar)

14 Intraocular lens

When the RCOphth NOD can identify the intraocular lens (IOL) model inserted during cataract surgery from the data received, this information can be used to allocate the lens to groups for the lens material, type of lens and loading format, where “Not allocated” refers to when the IOL information was not recorded or the IOL model was not able to be identified from the supplied information.

IOL material

- No IOL (aphakic)
- Hydrophilic
- Hydrophilic / Silicone
- Hydrophobic
- Hydrophobic / Hydrophilic
- Hydrophobic / PMMA
- Silicone
- Not allocated

IOL type

- No IOL (aphakic)
- Monofocal Multipiece
- Monofocal Single piece
- Monofocal Toric
- Multifocal Toric
- Not allocated

IOL loading format

- No IOL (aphakic)
- Either preloaded or non-preloaded
- Non preloaded
- Preloaded
- Unknown
- Not allocated

15 Case Ascertainment

Case ascertainment is an estimate of the proportion of operations a centre performs that they have provided data to the audit for. This is useful when interpreting centre results. For example, centres with high case ascertainment percentages are providing to the audit data for a high proportion of their cases, and thus their results are likely to be representative of their case load.

Case ascertainment is reported as a percentage where the numerator is the number of operations using phacoemulsification provided to the audit which is calculated from the submitted data, and the denominator is the number of operations using phacoemulsification reported to NHS Digital for English centres, and to the Digital Health and Care Wales (DHCW) (formerly National Wales Informatics Service) for Welsh centres.

The denominator is adjusted pro rata to account for centres not having the facility to collect data for the complete audit year, for example if they implemented an EMR within an audit year. The proportion of the audit year the centre has supplied data for is multiplied by the NHS Digital or DCHW totals, for example a centre whose first date of surgery is 6 months before the end of the audit year will have their NHS Digital or DCHW total multiplied by 0.5 (i.e. divided by 2). This multiplication proportion is set to 1 for all centres whose date of first surgery in an audit year is within the first week of the audit year, and for all centres who have provided data for the previous audit year where the date of first surgery in the previous audit year was in the first 6 months of the previous audit year. The aim of the latter adjustment is to not artificially increase a centres case ascertainment percentage if they have the ability to collect data and are not doing so, using the information that they have provided data for an operation performed at least 6 months before the start of an audit year, and thus the assumption that they had the ability to record data for all operations in the subsequent audit year. Note, this latter adjustment does not apply to the 2020 NHS year due to the service disruption form COVID-19.

16 Posterior Capsular Rupture (PCR) and Vision Loss analyses

Separate risk factor models for use in case complexity adjusted PCR and Vision Loss have been created, with the PCR model updated for implementation in prospective audit year 8, and updating the Vision Loss model an aim when resources permit.

Explanatory documents for how the models were fitted, what risk factors are used in case complexity adjusted results, and how case complexity adjusted results are calculated can be found on the NOD website (www.nodaudit.org.uk/healthcare-professionals/resources).

PCR and Vision Loss graphs

The RCOphth NOD Audit website displays both unadjusted and adjusted for case complexity PCR and Vision Loss results for surgeons and centres using funnel plots. The unadjusted graphs do not have confidence limits plotted, whilst the adjusted for case complexity graphs have 95% and 99.8% confidence limits plotted using the logit transform derived from the comparator value and number of operations, where the upper boundaries of the 95% and 99.8% confidence intervals equate to alert and alarm levels in public reporting.

The comparator values used on the funnel plots were static and did not change for many audit years. These values were 2.0% for PCR and 1.5% for Vision Loss in the 'legacy' analysis and the first prospective year of the audit, and changed to 1.1% for PCR and 0.9% for visual loss for prospective audit years 2 to 7. As of prospective audit year 8, the method for deriving the comparator values has changed as follows;.

- Centres' PCR results – the observed (unadjusted) PCR rate for all eligible operations in the latest NHS year
- Centres Vision Loss results – the observed (unadjusted) Vision Loss rate for all eligible operations for assessing Vision Loss in the latest NHS year
- Surgeons PCR results for NOD internal outlier quality improvement process – the observed (unadjusted) PCR rate for all eligible operations performed by fully qualified (non-resident) surgeons in the latest three NHS years
- Surgeons Vision Loss results – the observed (unadjusted) Vision Loss rate for all eligible operations for assessing Vision Loss performed by fully qualified (non-resident) surgeons in the latest three NHS years

Individual surgeons who have contributed data to the RCOphth NOD have access to funnel plots on the RCOphth NOD Audit website allowing a surgeon to view their personal data in the context of their anonymised peers and to view their centre's data in the context of all other contributing centres.

As surgeons progress through training, they can have data at more than one grade, can work in multiple contributing centres and use more than one of the audit data collection systems. In the prospective cataract audit the surgeon's GMC number is used as part of the registration for the NOD website. This allows the matching of records for surgeons who have data for more than one centre or more than one contributing data collection system.

The results on the NOD website include a filter for the date of surgery which allows results to be presented for the time period of choice from 1st April 2010 up to the most recent completed audit year. There are plans to add filters for the surgeon grade to enable a surgeon to view their results for the different grades they have had in their career, and for the centre results to display where a contributing centre's surgeons on a specific grade relate to other centres surgeons on the same grade, for example resident surgeons. Another filter in the planning is for the site of surgery which would allow centres to see their results separately for the locations they perform surgery in.

17 Changes for the prospective national cataract audit

Audit year

For the prospective cataract audit years 1, 2, 3 and 4 the audit year was 1st September to 31st August. Starting from the prospective audit year 5, the audit year changed to the NHS year (1st April to 31st March) with all previous year's results in the audit reports equating to previous NHS years.

Centre number in annual reports

In the first six National Cataract Audit annual reports, centres were listed next to their results with an audit centre identifier number. As of Cataract Audit year 7, this structure for listing centre results was retired, and centres listed with results based on alphabetical order from the centres name. Below is the method for creating the now retired audit centre identifier number.

Posterior capsule rupture

The original PCR model created from the 'legacy' data applied to all reported expected and case complexity adjusted PCR estimates for prospective audits 1 to 7. The replacement PCR model was implemented in prospective audit year 8 and applies to all current subsequent audit years.

The comparator value used for the case complexity adjustment of PCR was 2.0% in the 'legacy' analysis and the first prospective year, and 1.1% for the subsequent prospective audit years until the implementation of the new PCR model in prospective audit year 8.

For the two reasons above, comparisons of year 8 expected and case complexity adjusted PCR rates reported prior to prospective audit year 8 are not valid. Recalculated estimates using the criteria implemented in prospective audit year 8 were released for the 2019, 2020, 2021 and 2022 NHS years with the year 8 results to enable fair comparison of the new methodology to four previous NHS years.

Visual acuity

For preoperative VA, the time interval was 90 days prior to surgery in the 'legacy' analysis and the first year of the prospective audit, and from 4 months prior to surgery in the second prospective audit year, before changing to the current period of 6 months as of the third prospective audit year. This was to increase the sample of eyes with a preoperative VA from centres that might have longer times between original assessment and listing for surgery to the actual day of surgery.

For postoperative VA, the time interval was 14 days to 4 months (inclusive) of cataract surgery in the 'legacy' analysis and prospective audit years 1 and 2, before changing to the current period of 6 months as of the third prospective audit year. This was to increase the sample of eyes with postoperative VA from centres that might have had delayed follow up returns from community assessments.

Postoperative Vision Loss

Two of the covariates used in the development of the postoperative Vision Loss case complexity adjustment model are not used in the calculation of reported adjusted visual loss rates for the prospective national cataract audit, these are;

- the presence of high myopia
- the occurrence of PCR

The presence of high myopia is not used due to concerns raised by surgeons that the Vision Loss risk model suggested a protective effect against visual acuity loss. This view is considered to be counter-intuitive by many ophthalmologists and as this result was based on small numbers, it is possible that the seemingly protective effect was an artefact of the rareness of the condition in the model sample. There are optical explanations for the protective effect of myopia, in that spectacles for myopes minify images, hence creating an artefactually poor visual acuity and explaining the superior acuity gained by contact lens use in myopes. In axial myopia there is some compensation for this minification as the retina is further away from the lens, hence there is relative magnification of the image at the retina. After cataract surgery, in which the refractive aim will usually be closer to emmetropia than pre-operatively, the magnification of images due to greater axial length remains, but the spectacle minification does not, hence myopes derive greater acuity gains from cataract surgery which could protect

them from appearing as cases of visual loss in the audit. We therefore anticipate including high myopia in a future re-fitted Vision Loss model.

Adjustment for the occurrence of PCR in the Vision Loss model is not done as doing so would artificially reduce the adverse VA impact of this event on VA outcome. For a surgeon or centre, a Vision Loss result is only produced if there is less than 40% of their sample with missing preoperative and postoperative VA data, and at least 50 eligible operations with both a preoperative and postoperative VA measurement.

The comparator value used for the case complexity adjustment of postoperative Vision Loss was 1.5% used in the 'legacy' analysis and the first prospective year, and 0.9% for the subsequent prospective audit years until the new method was implemented in audit year 8.

For the reason above, comparisons of year 8 expected and case complexity adjusted Vision Loss rates reported prior to prospective audit year 8 are not valid. Recalculated estimates using the criteria implemented in prospective audit year 8 were released for the 2019, 2020, 2021 and 2022 NHS years with the year 8 results to enable fair comparison of the new methodology to four previous NHS years.

Ocular co-pathology / known risk indicator

In the case complexity models the national cataract audit analysis has to assume that absence of any record of ocular co-pathology / know risk indicator data equates to the absence of the ocular co-pathology / known risk indicator in the eye.

The data submission for Open Eyes centres includes a description of the terms allocated to 'unspecified other' ocular co-pathology; these descriptions include existing ocular co-pathologies, cataract subtypes and systemic diseases or eye conditions that are not an ocular co-pathology for cataract surgery. This information has been used to improve the accuracy of the ocular co-pathology / known risk indicator data for centres using the Open Eyes EMR.

In the prospective cataract audit both Adnexal and Oculomotility are included with "Unspecified other" unless kept separate in a secondary analysis.

Currently in the prospective national cataract audit results, Fuchs's Endothelial Dystrophy is combined to corneal pathology and Stickler syndrome combined with "unspecified other" due to the infrequency of the recording of these conditions.

Full details for how ocular co-pathology / known risk factors are classified in the NOD audits can be found on the NOD website (www.nodaudit.org.uk/healthcare-professionals/resources).

Case ascertainment

For national cataract audit years 1 to 4, case ascertainment was reported for the September to August audit year and the denominator was provided to the audit for these time periods by NHS Digital and DCHW (from audit year 2 onwards). As of prospective audit year 5, the time period for reporting is the NHS year (April to March) and the audit has received data for this time period since.

For the 2016, 2017 and 2018 NHS years, the denominator is re-calculated using fractions of consecutive previous audit year September to August totals, with 5/12 of the 'first' year total and 7/12 of the 'second' year total to account for the previous audit year time periods overlapping NHS years.

18 Risk model reviewing

The RCOphth NOD aims to use case complexity adjustment models that reflect current practice as accurately as we can, adjusting for risk factors that the models indicate are significant. To update the risk factor models requires a significant amount of time from the audit statistical and clinical team members which is not always easy to schedule. If a new potential factor that data is not collected from is identified from new scientific information, then it can take a few years before the audit would have sufficient data to investigate the link with this possible new factor, as centres would have to start recording data for this possible new factor if not already part of their data collection.

19 Audit reporting destinations

Reporting destinations

The prospective national cataract audit results are published in annual reports available on the RCOphth NOD website. Results for centres are supplied to the Care Quality Commission (CQC) and on the completion of an audit year; a data set is uploaded to www.data.gov.uk and is accessed by the Getting It Right First Time Programme (GIRFT).

Annual reports - Centre adjusted PCR and Vision Loss results are provided for all operations performed in a centre including operations performed by resident surgeons. A minimum of 50 eligible operations per centre is required for inclusion. An individual centre level report is sent to participating centres, and an excel file of results for participating centres is available on the NOD website (www.nodaudit.org.uk).

For the CQC - Centre adjusted PCR and Vision Loss results are provided for all operations performed in a centre including operations performed by resident surgeons. A minimum of 50 eligible operations per centre is required for inclusion. The CQC will have the data for displaying both the 95% and 99.8% confidence intervals.

For the NOD website (www.nodaudit.org.uk):

Behind the secure log-in - Centre and surgeon unadjusted and adjusted PCR and Vision Loss results are available behind a secure log-in for access by relevant staff in participating centres. Date searching functionality is available when the data covers a period longer than the official prospective audit period. The adjusted graphs display the 95% and 99.8% confidence intervals. The aim is for clinical staff from participating centres to be able to use these results for internal audits and revalidation.

Public facing – The RCOphth NOD website has a public facing section where centres and individual fully trained surgeons' adjusted PCR and Vision Loss results for the audit period are available. Resident surgeons results are not publicly displayed, however all surgeons' data is included in the centres results.

For www.data.gov.uk – Once reporting of the data to all sources has been completed the audit data sets are uploaded to www.data.gov.uk.

For GIRFT – Once the data sets have been uploaded to www.data.gov.uk, the GIRFT programme are informed so that the GIRFT team can access the data for their use.