Diabetic Retinopathy Screening Service

Annual Report
2018/19

Scottish
Diabetic Retinopathy
Screening Collaborative

Hosted by
NHS Highland

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Please refer to Guidance Notes for completion of the Annual Report prior to submission

The completed Annual Report should be sent electronically by 31 May to:
Email: nss.nsd-reports@nhs.net

Executive Summary

Statement from the DRS Lead Clinician 2019

In the DRS Collaborative annual report for 2018-19 we present our aims and achievements against the quality framework of NHS Scotland as a safe, effective and person centred service.

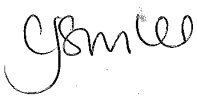
Much of the year was spent focussing on the implementation of the variable screening interval and enhanced screening with OCT. A business case for this was accepted by the Scottish government and work was begun on the changes that needed to be made to make this happen mid 2019. Unfortunately because of software supplier issues, this has been put back until 2020. With service growth of 5% per year, we did not achieve our target of screening 80% within 12 months. We have an evidence based solution and NSC recommendation for this which stratifies risk of developing referable retinopathy. It is frustrating that the timetable for implementation has had to be extended through circumstances outside our control. The collaborative has been very patient about this most recent delay.

Replacing our IT system with a new one so soon after the introduction of vector is perhaps not what we were expecting, but it does present opportunities for improvement. We have just completed the first full year of business as usual for vector after a very successful implementation. We are fortunate to have a very knowledgeable and experienced workforce who is always prepared to work hard to get the best for our service and I feel certain that this will help us with the planned IT changes in the near future.

The implementation of OCT into the service presents an exciting opportunity for our staff to gain new skills and knowledge. This is helpful in recruiting and retaining good staff. We know that we are vulnerable to staff shortages being a very specialised service without a pool of people with the appropriate skills to step in quickly when there are gaps. It will be good to see our staff managing this new area within the screening service, reducing the stress and inconvenience of referral to ophthalmology services for people with diabetes.

I have been the lead clinician since 2012 and it has been a pleasure to lead the service. I have gained enormous experience from the wide variety of skills my colleagues contribute to the service. I would particularly like to thank Mike Black and Neville Lee who have supported me brilliantly throughout this period.

I wish the service well for the future.



Dr Caroline Styles
National Clinical Lead, DRS Collaborative, NSS
August 2019

1. Service Delivery

Overview/Aim of Programme

a) People with diabetes can develop a condition affecting the eyes called retinopathy, which although initially asymptomatic can lead to partial loss of vision and eventual blindness. Research has shown that 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.
b) In July 2003 the Scottish Executive Health Department issued guidance (HDL (2003)33) to Health Boards to the effect that each Board should take steps to provide diabetic retinopathy screening for all people with diabetes over the age of 12 to the standards recommended by the Health Technology Board for Scotland in its report published in April 2002 and according to subsequent guidance on its implementation, as part of a Scottish National Diabetic Retinopathy Screening Programme.
c) The national Diabetic Retinopathy Screening Programme (DRSP) is an integral part of patients' diabetes care and involves a regular (usually annual) eye check using a digital photograph of the retina or slit lamp examination if photography is not possible. The primary objective of the programme is to detect referable (potentially sight-threatening) retinopathy so that it can be treated at a stage where the probability of preservation of vision is high.
d) The DRS Collaborative has been established to bring together individuals from all NHS Boards in Scotland involved in the delivery of the retinopathy screening programme, including representatives of the various professions involved as well as patient representatives and other stakeholders. The aim of the DRS Collaborative is to facilitate the delivery of the national diabetic retinopathy screening service in Scotland through the development and maintenance of effective service interfaces across Scotland, and the provision of support for good practice.

What is Diabetic Retinopathy?

a) People with diabetes have a higher chance of developing certain serious health problems, including damage to the eyes. A well-recognised and common complication of diabetes is damage to the blood vessels in the retina, the nerve fibre layer at the back of the eye. This is known as retinopathy and is the largest single cause of blindness amongst adults of a working age in the UK (*Scottish Diabetes Framework,* April 2002). In its early stages, diabetic retinopathy is symptom-free and progression of disease can be prevented by laser treatment or by improved metabolic and/or blood pressure control.

Description of Screening Pathway

a) All patients with diabetes in Scotland over the age of 12 are to be offered diabetic retinopathy screening using digital photography within an organised NHS Board programme that meets the recommendations of the Health Technology Assessment published in 2002.
b) An invitation to patients will be automatically sent on an annual basis to invite them to screening or more frequently if the screening programme requires it to all those aged 12 and over. Patients will be automatically sent reminder letters if they fail to attend and they may only be permanently suspended from the programme by or on the advice of their GP. Patients will be sent their result letters within 20 working days of the appointment.

c) The patients GP or care provider will also be sent a result letter. The patient result letter will inform patients of the follow outcomes –

- No retinopathy
- Mild retinopathy
- Observable maculopathy/ observable background retinopathy
- Referable maculopathy / referable background retinopathy/ proliferative retinopathy

2. Activity Levels

See **Appendix B** of this report for Key Performance Indicators (KPI) statistics for the FY 2018. Headline summary of performance is listed below-

- Total population on Vector as at 01st April 2019 – **332,438** (KPI 0).
- Permanent suspensions - – **26,962** (KPI 0).
- Temporarily suspended - - **25,872** (KPI 0).
- Eligible population - - **283,438** (KPI 0).
- **96.8 % (263,095)** of the total number of the currently eligible population were invited to screening in 2018 (KPI 1).
- **76.3% (216,233)** of the total number of the currently eligible population attended at least once in the FY 2018 (KPI 2).
- **73.8 % (209,202)** of the total number of the currently eligible population was successfully screened in FY 2018 (KPI 4).
- **92.2% (209,213)** of written reports were produced within 20 working days (KPI 9)
- **4.1% (9119)** of the total number of the current eligible population were referred to Ophthalmology (KPI 13).

3. Performance and Clinical Outcomes

3.1 Equitable -

a) The DRS Service as a national programme has not undertaken an Equality and Diversity Impact Assessment in last 4 years although individual Health boards may have completed this for their own local programmes. Patients are automatically referred via their GP or secondary care system into the programme based only on their diabetes diagnosis and clinical eligibility. Patients can also be screened if they are diagnosed with diabetes and present themselves at a screening clinic; there is therefore an equitable service provision across Scotland for all patients regardless of ethnicity, gender, age or demographics. Ongoing reporting is provided to the boards to allow for review of the local service provision. The reporting provided to boards and nationally allows for detailed reporting of screening by Age, Gender, Ethnicity and Deprivation quintile.

3.1 Efficient-

a) See **Appendix E** for details of resources and staffing used across the Health Boards including workforce information, See Appendix F for a report on Staff training and accreditation for 2018.

b) See **Annex C** for details of the financial report for the DRS Collaborative for 2018.

c) See **Appendix B** for details of KPI reports of population, uptake and invitation rates for 2018.

3.2 Timely

a) See **Appendix B** of this report for Key Performance Indicators (KPI) statistics for the FY 2018.

b) Review of Screening Pathway -

- A business case for changes to screening intervals (Revised Screening Intervals - RSI) and the introduction of OCT for DRS was submitted to the Scottish Screening Committee in 2018. The case was agreed and authority to implement the changes to the programme patient pathway was agreed for 2019. See **Annex M** for an Executive sum summary and description of this significant change.
- Health Improvement Scotland undertook a review of QIS Standards (2004) in 2016. See para **3.4 Effectiveness** for a summary.
- **Annex N** describes the most up to date 'Advice for Screeners' v1.2 issued post review of EQA Autumn 2015.

3.3 Effectiveness

a) Audit activity -
Health Board areas and DRS teams were visited as part of the annual objectives of the DRS collaborative. These visits are undertaken to provide a general review of the area performance and compliance with national policies and procedures. Discussions on staffing and resource shortfalls due to sickness or other long term leave along with local IT issues took place. Further visits to all Health boards in Scotland are planned on a rolling basis.

b) Clinical Outcomes/Performance against national standards –

Performance of the DRSP currently meets the essential requirements NHS the revised HIS standards issued in May 2016. In developing these revised standards the current standards were reviewed and amended. Standards are maintained by the use of the Vector system and nationally agreed policies/procedures.

A summary of the overall revised HIS 2016 standards are below -

- **Standard 1:** Scotland has an effective national diabetic retinopathy screening Service.
- **Standard 2:** All eligible people are invited for diabetic retinopathy screening.
- **Standard 3:** The number of people attending diabetic retinopathy screening is maximised within the principles of informed choice.
- **Standard 4:** The diabetic retinopathy screening process is safe, effective and person-centred.

- **Standard 5:** People who require referral and have been screened are referred to Ophthalmology services for assessment in line with DRS Collaborative referral protocols.

- **Standard 6:** People requiring treatment can access nationally approved treatments in a timely manner.

The Quality Improvement Scotland (QIS) and additional or revised Health Improvement Scotland (HIS) requirements are -

QIS 2(a) 1 - all eligible people have a written prompt to attend for screening at least once every year, unless a current screening result is already on the call-recall module. (See **Appendix B** for KPI 1 performance results)

(2016) HIS standard 2.3 - The invitation to attend diabetic retinopathy screening is offered to all newly diagnosed patients within 30 calendar days of the DRS Collaborative receiving notification.

(2016) HIS standard 2.4 - The date of the appointment offered to all newly diagnosed patients is within 90 calendar days of the DRS Collaborative receiving notification.

(**HIS revised and amended**) definitions for 'Attendance' and 'Uptake' have now been defined as:

- **Attendance** - the invited person attends their screening appointment.
- **Uptake** - the invited person completes the screening process, including slit lamp examination, when images are un-gradable.

2(a) 2 - Arrangements are in place to reach people not on the diabetes register or accessible via their GP (e.g. long-stay institutions).

2(a) 3 - a minimum of 80% of eligible people with diabetes attend a screening appointment within the last year. (See **Appendix B** for KPI 2 performance results)

2(a) 4 - Screening uptake is monitored at NHS Board level and action taken where targets are not achieved. (See **Appendix B** for KPI 2 performance results)

2(a) 5 - The NSD protocol is followed for the management of non-attendees, both those who fail to attend appointments and those who actively opt out of the screening programme, taking into account patient choice and responsibility for their care.

2(a) 6 - all staff involved in call-recall receive training in using the call-recall IT system before undertaking unsupervised work.

2(b) 1 - A national protocol defining failsafe procedures for follow-up of eligible people with diabetes with referable grades of retinopathy are in use. See http://www.ndrs-wp.scot.nhs.uk/Manual/Docs/Follow-

up%20protocol%20v1.2.pdf for full details. This has recently been reviewed and agreement was reached by the DRS collaborative to amend it to failsafe patients for re-screening if they did not attend a subsequent Ophthalmology referral. Prior to this review, patients who did not attend Ophthalmology were re-referred. See item 4.b of this report for more details.

3(a) 1 - Photographs are taken using equipment and techniques in accordance with national guidelines.

(2016) HIS standard 4.3 - DRS Collaborative protocols are used to internally and externally quality assures the work of graders. A maximum rate of un-gradable images is 2.5% for digital imaging and 2% for slit lamp examinations.

3(b) 1 - All staff receive full training in retinal screening before working unsupervised, and all staff receive training in new techniques.

3(b) 2 - Staff undertake continuing professional development (CPD) as per professional and/or national guidelines.

(Revised and amended) HIS standard 4.3 A minimum of 95% of people screened are sent the result in writing within 4 weeks (20 working days) of the photograph being taken. (See **Appendix B** of this report for KPI 9 performance results).

4(a) 1 - Only staff trained and accredited according to national guidelines sign-off reports.

4(b) 1 - The images from a minimum of 500 randomly selected patients (or all images graded if less than 500 patients) per grader per annum, not otherwise referred to a third level grader, are reviewed by a third level grader.

4(b) 2 - If clinically important grading errors are found, further investigation and/or additional training of the grader is carried out.

4(c) 1 - Screening histories of eligible people with diabetes developing referable retinopathy are reviewed, and any areas in the programme which require improvement are identified and addressed.

4(c) 2 - All services must submit national minimum dataset returns. (See **Appendix B** for an overview of these data returns for 2018).

4(d) 1 - All grading staff in the screening programme participate in NSD proficiency testing as part of revalidation training. IQA and EQA programmes are in place. (See **Appendix C** for an overview of EQA results).

5(a) 1 - There is a referral process to a consultant ophthalmologist-led service for people with diabetes, with identified signs of developing diabetes-related retinopathy, in accordance with national grading recommendations.

(2016) HIS standard 5.1 - People graded as having previously untreated active proliferative retinopathy (active new vessels at the disc, or active new vessels elsewhere) are referred to ophthalmology services within 5 working days of first grading.

(2016) HIS standard 5.2 - People with symptomatic optical coherence tomography positive diabetic macular oedema are referred to ophthalmology services within 10 working days of first grading.

5(a) 2 - The diabetes care provider should be notified of all people whose eye examination has revealed retinopathy.

(2016) HIS standard 6.1 - People identified as having active, untreated, **high risk** proliferative retinopathy (active new vessels at the disc, or active new vessels elsewhere with vitreous haemorrhage) can access nationally approved treatments within 5 working days of receipt of referral.

(2016) HIS standard 6.2- People identified as having active, untreated, **early** proliferative retinopathy (active new vessels elsewhere in the absence of vitreous haemorrhage), can access nationally approved treatments within 20 working days of receipt of referral.

(2016) HIS standard 6.3 - People identified as having symptomatic optical coherence tomography positive diabetic macular oedema can access nationally approved treatments6, 16-17 within 20 working days of receipt of referral.

3.4 Safe

Quality Assurance-

- Internal (IQA) and External Quality Assurance (EQA) activities were undertaken by all graders in 2018. IQA is undertaken by all L1 and L2 graders as a mandatory function of the Vector system. This system passes a percentage of graded images (up to a maximum of 500 images per annum for each grader) to the L3 quality assessment grader. Level 1 images are also assessed by a Level 2 grader and Level 2 images are then assessed by Level 3 grader. Level 3 graders are then assessed by the External Quality Assurance (EQA) system as provided and hosted by Aberdeen University. As per the DRS policy all graders participate in at least 3 out of 4 rounds of the EQA scheme; however its main purpose is to show that an equitable and high quality grading standard is maintained across all 9 grading centres in Scotland. See **Appendix C** for an overview of national EQA performance for the 2 rounds undertaken in 2018.

- A DRS Recovery Action Plan (RAP) was developed and included in the EQA policy for DRS to assist boards with the steps they may need to consider should graders perform below standards in EQA. The RAP has been agreed and accepted by all boards and adopted as policy for DRS EQA. The RAP was not required in the reporting period 2018.

3.5 Person centred

General –

- Patient information leaflets were re-designed and distributed to all boards in 2014, these leaflets were reviewed in late 2017. These leaflets have essentially remained as before with some minor changes to contact information. The leaflets were designed in collaboration with NHS Health Scotland and are reviewed on a annual basis. These leaflets were also published in several alternative languages and in easy read format and can be viewed and downloaded at -

  http://www.healthscotland.com/uploads/documents/6257-YourGuideToDiabeticRetinopahyScreening.pdf

  http://www.healthscotland.com/documents/6257.aspx

  http://www.nhsinform.co.uk/Screening/diabeticretinopathy

- Several patients have complimented the DRS Service for the new patient information videos which were produced by NHS Tayside and distributed to service managers. These information films are available on the NHS Inform website and provide information to patients on what happens during their screening appointments in Polish, Chinese, Urdu, Russian, Arabic and Punjab. Some of these videos also include sign language or subtitling. This video in English with subtitles can be viewed at -

  https://www.nhsinform.scot/healthy-living/screening/diabetic-retinopathy/diabetic-retinopathy-screening-drs#taking-the-test

4. Quality and service Improvement

Service Improvement –

- See **Appendix F** for a report on staff training and accreditation undertaken over the reporting year. The training and accreditation coordinator has also highlighted that there ar**e continuing issues regarding the following points –**

  - The number of staff attaining the slit lamp examiner's award for 2018 is as follows: 2 probationers, 20 people having attained accreditation and a further 5 having gone through re-registration.

  - A Training Competency framework has been ratified by the DRS Executive Group and this along with some additional competencies is available on the DRS website.

  - The City & Guild qualification has now closed for new applications; however candidates already registered will be given until December 2019 to complete the award.

- As a replacement for the City & Guild qualification, Health Education England AND nhs Scotland have worked with Skills for Health and other clinical stakeholders to develop a national Level 3 qualification for Screeners: staff who undertake screening for either Abdominal Aortic Aneurysm Screeners (AAA) or Diabetic Retinopathy Screening (DRS). A single generic L3 Diploma 'Screener' qualification is now available nationally. This qualification has replaced existing training programmes for AAA and DRS screeners as of July 2018. The DRS programme in Scotland is using Pearsons as the course provider and NHS Greater Glasgow & Clyde as the awarding body. The DRS programme enrolled its first student on the Pearsons Level 3 qualification in July 2018.

- See **Annex M** for a report of the Revised Screening Intervals and OCT business case and proposed changes to the DRS programme.

- **DRS standards** were completely reviewed and re-drafted by HealthCare Improvement Standards (HIS) in 2016. The reviewed standards came into force in June 2016.

  - The review project group was chaired by Dr John Olson, Consultant Ophthalmic Physician and Clinical Director of Retinal Screening, NHS Grampian. The group convened in August 2015, considered evidence and identified key themes for the reviewed standards development.
  - For consultation the group engaged with service users and the general public, 3rd sector organisations, NHS boards and staff, professional bodies (including Royal Colleges) and private sector organisations using a variety of approaches, including:
    - Focus groups (with service users, members of the public and NHS staff).
    - An online survey and a feedback form.
  - A full consultation report and information on the members of the review group is available on the Healthcare Improvement Scotland website - www.healthcareimprovementscotland.org
  - Clinical members of the project group were responsible for advising on the professional and clinical aspects of the project group's work. The chair was assigned lead responsibility for providing formal clinical assurance and sign-off on the technical and professional validity and acceptability of any reports or recommendations from the group.

5. Governance and Regulation

5.1 Clinical Governance

- DRS Service across Scotland varies slightly where it sits within local NHS Board structures, some within CHP and some within Operational Divisions. They are required to participate in local configuration for clinical governance. For example as in NHS Lothian, the DRS service Lead Clinician sits on the local

Ophthalmology Quality Improvements team as well as in the NHS Lothian DRS Steering Group both of which report to the Diabetes MCN. Both Diabetes MCN and Ophthalmology teams report to NHS Lothian's Clinical Governance & Risk Management board. Appointed DRS lead clinicians within NHS Boards report to their own Clinical or Medical Directors. All DRS Programs are expected to take part in local clinical and service audits.

- Healthcare Acquired Infection (HAI) & Scottish Patient Safety Programme (SPSP) - DRS services across Scotland sit within local NHS Board structures. They are required to participate in the local healthcare acquired Infection (HAI) and Scottish Patient Safety Programmes (SPSP) of their hosting Health Boards. DRS Service managers, Lead Clinicians and DRS Public Health Consultants (Board Coordinators) within NHS Boards report on these matters to their own Clinical or Medical Directors.

5.2 Risks and Issues

- A programme Risk Register is maintained by the DRS Collaborative Co-ordinator. The register is reviewed and updated regularly and tabled to the DRS Board Coordinators management group at their quarterly meetings. DRS Board coordinators discuss and agree risks and advise on changes or updates. The risk register is subsequently tabled for consideration and agreement to the DRS Executive management group at their quarterly meetings. The outstanding risks for the DRSP as of April 2019 are outlined in **Appendix G** to this report.

5.3 Adverse Events

- Adverse events are raised as an SBAR in line with National Services Directorate (NSD) governance requirements. There were no SBARs raised for DRSP in FY 2018.

5.4 Complaints and Compliments

- Complaints & Compliments - NHS Boards deal with local complaints and compliments using their own local procedures. The DRS Collaborative Coordinator on occasion has escalated complaints sent to him but there were none received for resolution or response in the reporting period.
- There have been some general comments discussed at service meeting from patients who regarding patient letters as 'unfriendly'. Particularly for people who have not attended screening appointments. The coordinator was not requested to respond to these but action has now been taken to amend DNA letters to reword them. The IT users group and DRS Executive have authorised this new wording and these have been incorporated into the Vector system.
- There were also comments passed on regarding the letters to boards about the opting out policy and the requirement to have a GP actually undertake this on the SCI-Diabetes system. SCI-Diabetes is currently the only place this can be actioned. Some boards have taken an approach where they seek the 'authority' of the GP in writing and will then suspend the patient where appropriate on their behalf. This approach has been authorised and indeed encouraged by the local Board coordinator. Boards have been advised to ensure they have the GP authority in writing (email) before carrying out suspensions.
- Several patients have complimented the DRS Service for the patient information videos which were produced by NHS Tayside and distributed to

service managers. These information films are available on the NHS Inform website and provide clear information to patients on what happens during their screening appointments. These videos are currently available in Polish, Chinese, Urdu, Russian, Arabic and Punjab. Some of these videos also include sign language and/or subtitles.

- General queries have been received from patients regarding the wider use of Optometrists for image capture on behalf of the DRS programme. The response is that the DRS programme encourages boards to use optometrists wherever possible. The DRS programme in Scotland currently uses Optometry services to capture images and provide slit lamp in NHS Ayrshire & Arran, NHS Highlands and NHS Western Isles. These boards use a combination of local optometrists and/or specialist teams of DRS screeners. The DRS programme in Scotland does not discourage the use of Optometrists and boards are free to decide on the best local service for their own patients. Where Optometrists are used, it is usually because of a small number or the rural and distant location of patients and economies of scale. However, the costs are significantly higher for the local health boards to use contracted Optometrists. The cost is approximately £25 per individual patient across Scotland for the DRS programme to have the patients digital images uploaded for our use. Current screening costs by dedicated DRS screening teams are significantly lower and vary from £8.60 to £11.50 per patient across Scotland.

5.5 Equality

Fair for All: Equality & Diversity-

- The DRS Service continues to support ethnic minority projects in both NHS Lothian and RNIB projects in NHS Greater Glasgow and Clyde. NHS Lothian's Minority Ethnic Health Inclusion Service (MEHIS) Link workers target high risk patients from minority ethnic or deprived backgrounds. These patients are in high risk groups for clinical reasons and also because they tend to have a higher DNA rate.
- Mobile DRS screening services are used and provided by some Health Board areas. Boards may also provide fixed or GP based screening clinics in remote or rural areas. NHS Highland, NHS Borders, NHS Western Isles use some localised Optometry based services for image capture. NHS Ayrshire and Arran use optometrists exclusively for image capture. These are all listed and described in the programme delivery report in **Appendix E** for each Health Board.

6. Financial reporting and workforce

6.1 Financial report for the DRS Collaborative in 2018 is included in Appendix D to this report.

6.2 Staffing and workforce report for the DRS Collaborative is included in Appendix E to this report.

7. Audit & Clinical Research / publications

Audit activity -

- Health Board areas and DRS teams were visited as part of the annual objectives of the DRS Collaborative. These visits are undertaken to provide a general review of the area performance and compliance with national policies and procedures. Discussions on staffing and resource shortfalls due to sickness or other long term leave along with local IT issues took place. Further visits to all Health boards in Scotland are planned on a rolling basis.
- Performance for the DRSP is required to meet the essential requirements of the revised HIS standards issued in May 2016. In developing these revised standards the previous 2003 QIS standards were reviewed and amended. Standards are maintained by the use of the Vector system to provide a systematic patient screening programme and pathway along with nationally agreed policies/procedures.
- Health boards are required to report individually in writing on a quarterly basis with their reported performance against agreed HIS 2016 standards. These board reports are tabled on a quarterly basis to the Board Coordinators and Executive group management for review and discussion. Boards that are out-with the normal performance margins are identified using standard funnel chart techniques of 2nd and 3rd order standard deviation. Boards must identify where they are falling short of performance targets and identify what action plan is in place to recover performance.
- Some Health Board areas and DRS teams were visited as part of the annual objectives of the DRS Collaborative. These visits are undertaken to provide a general review of the area performance and compliance with national policies and procedures. Discussions on staffing and resource shortfalls due to sickness or other long term leave along with local IT issues took place. Further visits to all Health boards in Scotland are planned on a rolling basis.

Research activities -

- The DRSP will always endeavour to support research projects by providing appropriate data as long as the research is regarding the treatment of retinopathy, diabetes or outcomes for patients. All research requests and activities are approved in full by the appropriate Caldicott guardians. For 2018 there were three external research projects supported.
    - Ongoing - We continue to work with University of Glasgow and Oxford University on the proposed LENS (Lowering Events in Non-Proliferative Retinopathy in Scotland. This is a trial of drug called Fenofibrate that is already routinely prescribed for other conditions. The ‘side effect’ of the drug seems to significantly reduce the chances of retinopathy occurring. The LENS research project is ongoing since 2017.
    - NHS Lothian requested a research study of Fundus images and associated data for patients with Type 1 diabetes who have either started on treatment with insulin pump therapy or who have been treated with islet transplantation. The focus is on retinopathy changes in the first 12 -24 months post intervention, compared with 12-24 months pre intervention. Images access is required so they could analyse them using semi-automated software which analyses vessel width and tortuosity to provide a quantitative assessment.
    - ET2DS study into risk factors for cognitive decline in people with Type 2 diabetes; the Edinburgh Type 2 diabetes study 10 year follow-up.

8. Looking ahead

See **Appendix J** of this report for the potential planned developments and timescales that the programme expects to undertake in the coming years. These are summarised here -

a. iGrading platform (Autograder) commercial software wrapper to be upgraded to supported version and further development of iGrading capability.
b. OCT surveillance within DRS.
c. Risk based variable Screening Intervals.
d. Use of the secure portal (such as My-Diabetes-My Way) and other web or electronic means (texting, email) to enhance communications with patients.
e. Single Virtual national mail provider such as Royal Mail.
f. Connectivity from Vector to SCI-Store for e-referrals and discharges to hospital eye services (HES).
g. Data archiving for the DRS system. (older images and none active patients)

Appendices

Appendix A – Objectives and for the DRS Collaborative for 2018.
Appendix B - Key Performance statistics for the FY 2018.
Appendix C – External Quality Assurance (EQA) for graders - reports for 2018
Appendix D – Financial report for the DRS Collaborative.
Appendix E - Workforce information.
Appendix F - Training report
Appendix G – Risk Register May 2019
Appendix H – Summary RSI and OCT business Case
Appendix I – Patient information leaflet 2018.
Appendix J – Looking ahead and roadmap.

Objectives are set as part of the annual report for the DRS Collaborative. The objectives for 2018 are summarised here.

Efficient, Effective, Safe, Timely, Person Centred, Equitable - Over and above these the DRS Collaborative have also set some key objectives for it to achieve in the year ahead. These were originally based on some of the strategic key challenges for the programme as distilled from the management group conference and these have now been expanded and extended.

Progress against objectives for 2018 - The following table summarises the progress against the 2018 objectives over the 12 month period to April 2019.

Objective	Current Status
1. To have robust and secure IT systems to support the requirements of the diabetic retinopathy screening programme. We will replace the current national IT system with Vector.	Vector implementation and recovery to Business as Usual (BAU) took place over most of 2017. There were no adverse events or significant unplanned delays in screening for any patients during the implementation phase. For the first six months of 2018 it has been very much BAU, we have had a robust system which has met the needs of the programme. There have been some system failures and these have been mainly in relation to infrastructure either within the SWAN network or the NPS data centre. However the Vector application itself has been very stable with no concerns or major issues. We had a software update with Release 24 in May 2018 and this gave us enhanced KPI reporting and also corrected minor faults and issues. The IT user group has been reformed under the chairmanship of Dr Nigel Calvert and all requests for change and outstanding issues are being categorised and prioritised for approval via the change management process.
2. To ensure that Key Performance Indicators (KPIs) are available to boards and support quality improvement. These will be a vital aspect of the Vector system and these have been included as a significant component of the replacement system specification.	The Vector KPI reporting system is the main reporting tool for the DRS Collaborative. The national performance reports for the twelve month period for Q4 2018 are included in this report. The KPI system has proved in general to be an accurate tool for reporting of activity. However these KPIs are based on Vector data and will only be fully verified over use with time. The output of KPI reports is being developed to have the output reported on Excel spreadsheets, this allows for graphing and flexibility of presentation of data. Enhanced reporting capabilities were provided as part of release 24 and these can be used for management of performance as required in particular for age, gender, deprivation quintile, and ethnicity. This type of reporting will continue to be developed and provided from the Vector system.

Objective	Current Status
3. To develop the reporting capabilities both from Vector to support daily management activities and provide bespoke reporting and research capabilities from all of the data available to the DRS Collaborative.	The system specialist has developed bespoke reporting capabilities and this key requirement will continue in Vector going forwards. This allows the programme to support research projects and has been crucial in reducing the dependence on support from software suppliers and also in confirming and then correcting data recording errors. Also, bespoke reporting allows us to confirm and check suppliers software updates are working to specification. We are also able to confirm that our data is correct and maintained to a high degree of confidence. However, the bespoke query engine provided as part of the Vector system is proving to be very difficult to use and does not provide the detailed reporting capability as hoped. Ongoing discussions with NPS to improve the capability should allow us to further develop the system to meet our needs. The system specialist continues to provide bespoke reporting capabilities and support for board users and ongoing research projects. There have been several clinical research projects undertaken on diabetes in Scotland and we have significantly contributed to these important activities. The data contained within the DRS national screening programme is a valuable and rich resource for researchers to interpret. We have been able to participate in a number of these research projects both within Scotland and also as part of the UK Four Nations review of risk based variable screening intervals. These projects require large bespoke anonymised data extracts to specific requirements and have shown the high value of the data within the Vector system. Reporting is also being provided on activities by the auto-grading system. Further reporting continues to be developed to allow the DRS collaborative to analyse the effectiveness and efficiency of the auto-grader.
4. To maintain and develop the national EQA programme with a bi-annual cycle to be undertaken by all graders and grading centres in Scotland for quality assurance and educational purposes.	The Collaborative continues to work in partnership with Aberdeen University who have developed comprehensive advanced software that captures performance data for the External Quality Assurance (EQA) programme. We carried out a successful round in Spring 2018 and have a scheduled round in Oct. The overall results for EQA rounds in 2018 show that all 9 grading centres across Scotland continue to perform to a high and equitable standard. The policy for EQA continues to be developed and the previously developed 'Recovery Action Plan' (RAP) has now been adopted as part of the DRS EQA policy. The DRS lead clinicians review each EQA round and discuss non-consensus images using web conference technology (WEBEX) and this has saved significant travel time away from base. Lessons learned from each round are promulgated as a policy document 'Grading Advice' to all graders. These ongoing reviews and subsequent rounds form an important part of the educational and quality improvement aspect of EQA. The EQA programme is a high priority for the DRS collaborative and will need to be financially supported. In the long term inclusion of the EQA system into the Vector system is being considered but also alternative hosting providers are also being investigated. The independent report provided by Dr Keith Goatman is seen as a key strength of continuing with this specific methodology of external quality assurance. A paper published by Dr K Goatman (Aberdeen University) on the "EQA for image grading in the Scottish Diabetic Retinopathy Screening Programme" was published in the Diabetic Medicine Journal, see DME-2011-00339. A demonstration of the Scottish DRSP EQA system can be seen at http://www.abdn.ac.uk/eqa (username: demo password: test)

Objective	Current Status
5. To ensure that the screening programme meets the requirements of NHS HIS standards for Training and Accreditation of Staff by facilitating staff certification in Scotland and offering Slit Lamp Examiner training and accreditation. We will change our accreditation organisation to Persons and have this available for staff in 2018.	We are now providing the Pearsons Level 3 Diploma for Health Screeners. We were able to start registering students as from the 02 July 2018. There are currently 24 candidates for the new on-line training course. The cost per student is circa £200 (inc vat) and this is significantly cheaper as we benefit from using NHS Greater Glasgow and Clyde as the accreditation centre. There continues to be challenges in having a fully accredited workforce and in particular maintaining enough volunteer internal verifiers and assessors from boards to support the numbers of potential candidates. Therefore we can only register 7 candidates at present on the course. The 'Proof Positive' system which manages the administration of the course will only allow a limited number of students per assessor/internal verifier registered on the system. This will limit how many students we are able to train and qualify. The DRS collaborative continue to strongly encourage staff to complete the academic requirements. The DRS Collaborative have developed and approved a national standard for the training and accreditation of slit lamp examiners (SLE). Significant challenges remain in accreditation of SLE in remote and rural areas especially where there is no grading centre present. Discussion and debate continues about the high standards that have been set and how they can be achieved for all SLE across Scotland. In recognition of the commitment of staff members in achieving Slit Lamp Examiner status the DRS collaborative now issue accreditation certificates.
6. To maintain communication within the DRS Collaborative by providing a DRS website, organising DRS management group meetings on a quarterly basis, an In-Service training day or a combined management groups meeting for all staff. We will continue to minimise cost, travel and make the most efficient use of staff time by webinar, website, teleconference and videoconferencing technologies.	The Collaborative use the national WEBEX, BT Meet Me and Jabber desktop video tools to facilitate desktop conferencing and teleconference meetings where possible. These have been successfully used this year in place of face to face meetings for the IT Users Group and to allow the Lead clinicians to review the outcome report for each of the EQA rounds. These tools make best use of time and reduce travel as well as cost. The Collaborative will also make best use of traditional VC and teleconference facilities where available. Ongoing communication is maintained through the regular meetings of the 5 management sub-groups and the DRS Executive as well as regional meetings where appropriate. There is regular communication with all health boards and the IT systems suppliers on the IT Issues and this is mostly conducted via e-mail and teleconference. The Lead Clinician and DRS Coordinator attend the UK Diabetic Eye Screening (DES) meetings usually held in London as observers. DRS members also attend the 'Five Nations' screening meetings which take part twice per year. The aim of these meetings is to foster close working links, exchange good working practice and innovation. The collaborative also maintains an updated website www.ndrs-wp.scot.nhs.uk.

Objective	Current Status
7. To develop the national screening programme by providing a national automated grading system through computerised image analysis. This system is incorporated as a vital component of Vector and will continue to process as much as possible of the Level 1 work list.	The automated grader is now reliably processing around 600 patient cases per day and is available across 7 days per week. This gives a capacity to process over 216,000 patient episodes per annum or the entire Level 1 grading queue for Scotland. The automated grader was supported by Medalytix until mid 2016 when this company dissolved. In conjunction with SHIL (Scottish Health Innovations Ltd) the iGrading system was resumed to NHS ownership in 2017. The Autograder is now wholly owned and controlled by the NHS in Scotland. The Auto-Grader has been shown to finalise circa 44% of examinations as R0/M0 so it can reduce the grading workload by that amount prior to Level 1 manual grading. (see EQA reports for >90% specificity; >40% sensitivity for micro aneurism detection) A development Autograder instance has now been created and this has allowed us to test changes that are required to replace the supporting Microsoft SQL and Server software products. These are in need of replacement on an ongoing basis in order to maintain a secure and reliable system. The DRS System Specialist has undertaken a project in conjunction with SHIL and the University of Aberdeen to update all out of date support software in 2018. SHIL have also advised on how we can maintain the CE marking for the system as a medical device. NSS ITSBU contracts and vendor management have also met to agree contractual and governance arrangements for the maintenance of the system going forwards. The supporting software for the Autograder will be updated to modern and fully supported versions in 2019.

Objective	Current Status
8. To enhance communication with patients by reviewing and developing patient leaflets, investigating electronic communications with patients and care providers, and working with ethnic minority support teams.	A revised patient leaflet was produced in Oct 2018 in conjunction with NHS Health Scotland. The leaflet will be regularly reviewed and is also available in several languages or in easy read versions. A new patient's information video was developed by NHS Tayside for all NHS boards to use. The short video is available in several languages, including subtitled and sign language versions. The video is available to see at – http://www.nhsinform.co.uk/Screening/diabeticretinopathy/takingthetest We continue to work with the 'My Diabetes-My Way' patient portal team from SCI-Diabetes to merge our results with other diabetes data. The system has over 10,000 patients registered so far. Patients can access all of their DRS results and letters on-line via this secure portal. We believe this will become an important and vital part of any future development of the DRS system. Several meetings have taken place with the Royal Mail with a view to providing a' virtualised' mail provider for the DRS programme. The current format of letters produced from Vector meets the requirements of the Royal Mail interface and it was therefore decided that this should be pursued after implementation of the Vector system in 2018. There is some reluctance by boards to use this system as mail is currently already included as part of the overall NHS board mailing provision and this system would create a 'new' mailing cost for the DRS Service managers. Only a few boards have expressed interest so far with none actually taking it up so far. Ongoing discussion is taking place with some boards tentatively showing interest. The DRS Collaborative already work closely with the Minority Ethnic Health Inclusion Service (MEHIS) in NHS Lothian and RNIB in Greater Glasgow to analyse DRS screening data to report on high risk patient groups who do not attend screening.
9. To undertake short, medium and long term planning to take into account the changing landscape of DRS screening activities i.e. OCT, risk based screening intervals and national eHealth policies. We will also work in partnership with other diabetic retinopathy screening programmes in the 4 UK Nations and the Republic of Ireland group to exchange ideas and information in order to develop best practice and share innovations.	A DRS programme progression and planning roadmap for 2018 and beyond was re-drafted. This document outlines the proposed planned (and possible) significant events for the DRS collaborative in the years ahead. There are also some events with unknown timescales but these can be anticipated to impact the DRS programme. The key early events that have already occurred by end of 2018 are – Vector system development, development of the iGrading system, L2 to L3 grader, Variable Screening, OCT surveillance. A significant amount of work was carried out in 2018 developing the business case for OCT and risk based screening intervals. The Scottish Screening Committee (SCC) approved the finalised business case in Aug 2018. A project manager was appointed and a PID was drafted and agreed at the initial project board meeting in Jan 2019.

Objective	Current Status
10. The lead clinician, collaborative coordinator and system specialist will visit health board areas and meet with DRSP teams in order to provide support on specific local issues related to the provision of the DRS Service to agreed national standards	Visits were carried out to - NHS Grampian, NHS Lothian, NHS Highland and NHS Greater Glasgow. Ongoing visits to Health Board areas are planned for the remainder of this year and will be undertaken on an opportunistic rolling basis.

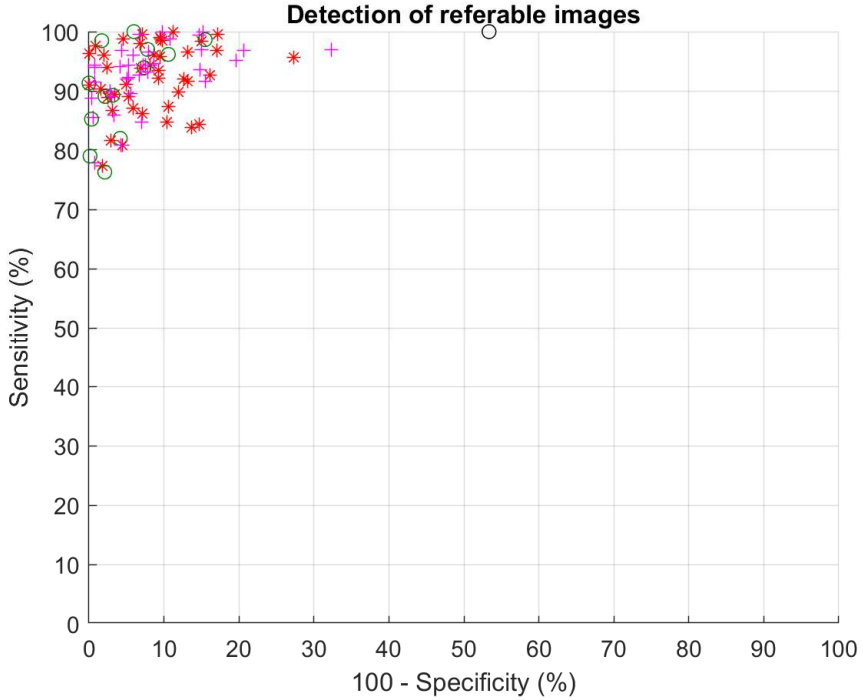
Appendix B –
Performance reports for DRS 2018

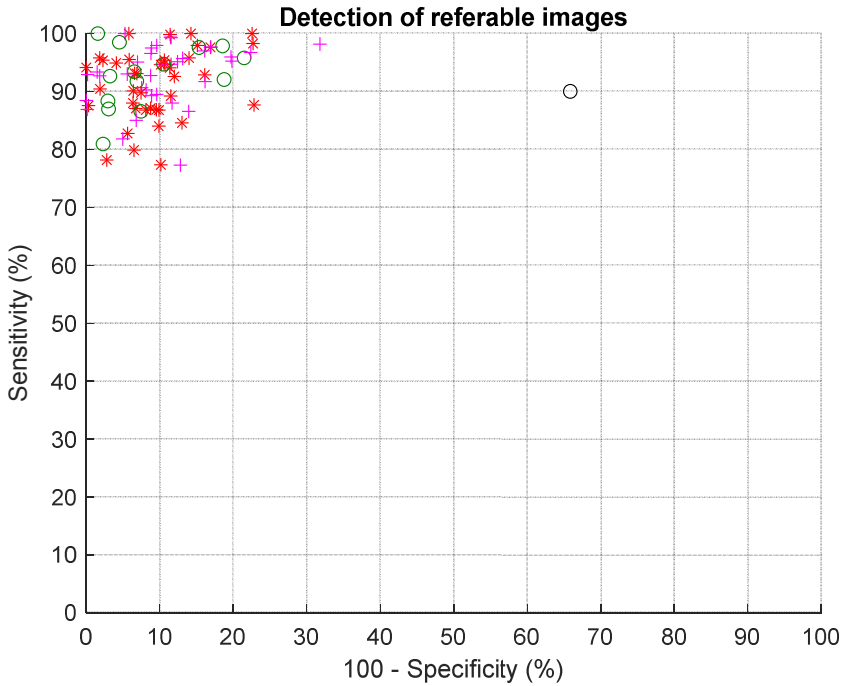
DRSP Key performance report for FY 2018 as at 01 April 2019. (All numbers are taken from Vector KPIs)		
Start date	**01 Apr-18**	
Reference date	**01-Apr-19**	
Total Diabetic Population aged 12 and over on Vector (KPI 0)	332,438	
Total number of people who are permanently suspended (KPI 0)	26,962	
Total number of people who are temporarily suspended (KPI 0)	25,872	
Eligible population as at 01 April 2019 (KPI 0)	283,438	
Number of individuals attending at least once (KPI 2) – HIS Target is **80%**	216,233	**76.3%**
Total number of the current eligible population successfully screened (KPI 4) – HIS Target is **80%**	209,202	**73.8%**
Remaining population not suspended or successfully screened.	67,205	**23.7%**
Number of referrals to Ophthalmology on account of Retinopathy (KPI 13) - No Target	9,119	**4.1%**
Episodes for which written report is less than or equal to 20 working days. (KPI 9) - HIS Target is **95%**	209,213	**92.2%**

DRSP performance **2017** as at 01 April 2018	DRSP performance **2016** as at 01 April 2017 (Soarian ceased on 6th Feb 2017)	DRSP performance **2015** as at 01 April 2016	DRSP performance **2014** as at 01 April 2015	DRSP performance **2013** as at 01 April 2014.	DRSP performance **2012** as at 01 April 2013.
01 Apr-17	**01 Apr-16**	**01 Apr-15**	**01 Apr-14**	**01 Apr-13**	**01 Apr-12**
01-Apr-18	**06-Feb-17**	**01-Apr-16**	**01-Apr-15**	**01-Apr-14**	**01-Apr-13**
319,308	315,218	307,876	298,101	287,481	275,061
25,646	24,049	22,123	20,582	18,558	16,801
22,617	25,304	25,569	25,863	26,488	24,577
274,607	271,013	263,928	255,928	247,017	237,333
201,220 (73.3%)	186,916 (69%)	205,487 (77.9%)	201,299 (78.7%)	199,268 (80.7%)	184,617 (77.8%)
196,963 (71.7%)	184,265 (68.3%)	200,699 (76.0%)	195,513 (76.4%)	194,480 (78.7%)	178,559 (75.2%)
77,644 (28.3%)	84,097 (31.0%)	58,441 (22.1%)	54,629 (21.3%)	52,537 (19.3%)	52,716 (22.2%)
8,422 (4.0%)	7,536 (3.9%)	8,205 (3.8%)	7,281 (3.5%)	7,762 (3.7%)	6,834 (3.6%)
151,656 (69.4%)	195,665 (98.5%)	212,072 (95.6%)	209,704 (96.2%)	203,851 (93.9%)	198,863 (94.7%)

Appendix C – External Quality Assessment (EQA) for graders - DRS 2018

Summary of Receiver Operator Characteristic (ROC) plots for grader sensitivity/specificity in detecting referable images. Level 1 human graders are shown by red asterisks, Level 2 by magenta crosses and Level 3 by green circles. The black circle indicates the performance of the auto-grader. Detailed reports are provided for each round to the DRS programme the DRS Lead clinician.





Results from **Spring 2018** on the left and **Autumn 2018** are on the right. These reports were provided by Dr Keith Goatman – Aberdeen University.

Appendix D – Financial report for FY 2018 – DRS Collaborative

NSD Return for Financial year 2018/2019

Diabetic Retinopathy Screening Collaborative
Budget Report for the Year Ended 31st March 2019
National Services Division

	Budget	**Actual**	**Variance**	
	£	**£**	**£**	
Lead Clinician	22,800	22,800	0	Dr Styles
Co-ordinator (Band 7)	56,785	56,785	0	Mike Black
IT Operational Manager (Band 6)	48,128	48,128	0	Neville Lee
Education & Traning (Band 7)	4,500	4,500	0	SLA - estimated 18/19 cost
Supplies and Services				
Computer/Office Equipment	1,378	1,378	0	Computer Equip/ Broadband fob
Stationery/Printing	1,386	1,386	0	
Travel Expenses	2,158	2,158	0	
Facilities booking	6,083	6,083	0	BT Meet Me conferences/Hire meeting rooms/Course fees
EQA - Univeristy of Aberdeen	10,255	10,255	0	Estimated 18/19 cost
Balance	2,672	0	2,672	
Total Expenditure	**156,145**	**153,473**	**2,672**	
Income - Work for ET2D Study	-4,727	-4,727	0	
	-	-		
NSD Funding 18/19	151,418	151,418	0	
	-	**-**		
Total Income	**156,145**	**156,145**	**0**	
Year-end Position	**0**	**-2,672**	**2,672**	

Appendix E – Workforce and Staffing report for 2018 – DRS Collaborative

1. Programme Information					
1.1 Health Board Name	**Ayrshire & Arran**	**Borders**	**Dumfries & Galloway**	**Forth Valley**	**Fife**
1.2 Programme Board Coordinator	Esther Aspinall Esther.aspinall@nhs.net	Julieann Brennan Department of Public Health, NHS Borders 1st Floor, Education Centre, Border General Hospital Newstead, Melrose, TD6 9BS Direct Dial (01896) 825548 Mobile 07810 432777 Email: julieann.brennan@borders.scot.nhs.uk	Dr Nigel Calvert, Consultant in Public health Medicine (Health Protection and Screening) NHS Dumfries & Galloway, Ryan South, Crichton Hall, Dumfries, DG1 4TG Tel : 01387 272724 email: nigel.calvert@nhs.net	Dr Oliver Harding, Consultant in Public Health Medicine, Carseview House, Stirling, 01786 457265 oliver.harding@nhs.net	Dr Josie Murray Email: josie.murray@nhs.net
1.3 Accountable clinical lead	Dr Mohan Varikkara, Consultant Ophthalmologist Mohan.Varikarra@aaaht.scot.nhs.uk, Tel 01563 527040	Dr Karen Madill Consultant Ophthalmologist PAEP ,NHS Lothian Chalmers Street Edinburgh EH3 9HA 0131 533712 Karen.madill@nhslothian.scot.nhs.uk	Susanna Boytha, Consultant Ophthalmologist susanna.boytha@nhs.net	Dr John Doig. John.doig@nhs.net 01324 566346 (Secretary)	Dr Caroline Styles, DRS Lead Clinician. Telephone: 01592 623623 ext 3853. Email: caroline.styles@nhs.net
1.4 Service Manager	Diane Smith, Diabetes MCN Manager/Retinal Screening Facilitator, diane.smith@aapct.scot.nhs.uk, Tel 01294 323470		Jane Carrick, DRS Service Manager Tel: 01387 244310 email: jane.carrick@nhs.net	Lorraine Fowler, Diabetes Systems Administrator, Stirling Community Hospital, Livilands Gate, Stirling, FK8 2AU. Lorraine.fowler@nhs.net . 01786 434169.	Lynn Garvey, lead Nurse First Floor Cameron Hospital, Telephone: 01592 226465(46465) Email: l.garvey@nhs.net
1.5 Location	Room 745, 2nd Floor, Administration Building, Ayrshire Central Hospital, Kilwinning Road, Irvine KA12 8SS	Border General Hospital Newstead, Melrose, TD6 9BS	Diabetic Retinopathy Screening Service, Cairnsmore East, Crichton Hall, Bankend Road, Dumfries DG1 4TG Tel: 01387 244228 email: ann.weir@nhs.net or Tel: 01387 244325 email: kym.cowan@nhs.net	Diabetes Unit, Stirling Community Hospital, Livilands Gate, Stirling, FK8 2AU. 01786 434169. Forth Valley Royal Hospital, Level 2, J block, Stirling Road, Larbert - 01324 566928	NHS FIFE DIABETIC RETINOPATHY SERVICE, Ward 8, Cameron Hospital, Windygates, Fife, KY8 5RRk. Tel: 01592 226852

1.6 Referral Centres	Ayr Hospital, Crosshouse Hospital, Inverclyde Royal Hospital,	Eye Centre, Borders General Hospital (BGH)	Ophthalmology Department, D&G Royal Infirmary, Bankend Road, Dumfries DG1 4AP Tel: 01387 246246 Ophthalmology Department, Galloway Community Hospital, Stranraer DG9 7HX Tel: 01776 707707 Ophthalmology Department, 4 Warrell Drive, Rosehill, Carlisle Tel: 01228 602780 or 01228 814366	Ophthalmology Dept, Falkirk Community Hospital, Westburn Avenue, Falkirk. OCT Clinic – Ophthalmology Dept, Falkirk Community Hospital, Westburn Avenue, Falkirk	Queen Margaret Hospital, Whitefield Road, Dunfermline,KY12 0SU Victoria Hospital, Hayfield Road, Kirkcaldy,KY2 5AH Ninewells Hospital, Dundee, DD1 9SY
1.7 Biomicroscopy arrangements	Slit lamp examination carried out by all accredited Optometrists at 26 Optometry Practices immediately following photograph. If screening is deemed ungradable at the Diabetic Clinics, patients are sent an invitation to make an appointment with an accredited Optometrist for biomicroscopy. Slit Lamp is also carried out at HMP Bowhouse.	Either an appointment is made for them in a slit lamp clinic at the BGH or they are asked to make an appointment with a local optometrist, choosing from a list of participating optometrists provided.	2 static sites Site 1 provides a one stop photo +- slit lamp bio microscopy same day appt. Site 2 provides a one stop photo + S/L appt as above for 50% of patients and the other 50% require a second invite to a S/L clinic (usually the first Friday of the Month) Mobile service patients require a second appointment for bio microscopy at site 2. Appt usually within 4 weeks as there is a clinic first Friday of the month.	Patients with ungradable or unobtainable images following camera screening are examined in a slit lamp clinic. There are 3 slit lamp clinics per week in NHS Forth Valley. Two clinics are held in Forth Valley Royal, Outpatients Dept, Stirling Road, Larbert and one other clinic held in Stirling Community Hospital, Livilands Gate, Stirling., FK8 2AU.	3 slit lamp site across fife patients are referred according to area
1.8 Health Board GP Practices	56	25	37	57	58
1.9 Screening GP Practices	57	25	37	57	58

2. Delivery Model					
	Ayrshire & Arran	**Borders**	**Dumfries & Galloway**	**Forth Valley**	**Fife**
2.1 Programme structure/ model	Patients are invited to make an appointment for screening when their recall date is imminent. They are sent an invitation letter and list of Opticians including the hospital sites to choose from. 26 Optometry Practices providing digital screening and Biomicroscopy. 2 Hospital sites providing digital screening. External Agencies, Visioncall, Healthcall, First Sight Opticians all carry out Domiciliary visits only. JR Shaw Optometrists carry out Slit Lamp examinations at HMP Bowhouse	The programme is delivered using 1 mobile camera visiting various GP practices and NHS Borders premises. Slit lamp bio-microscopy is done by an ophthalmologist at the BGH or one of 17 community optometrists throughout the Borders. The optometrists are being used on a short term basis to help with a backlog.	Brief summary of how screening is delivered, including: - number of photographic static sites - 3 - mobile – 1 van covering 20 G.P. practices, at 22 locations due to branch surgeries - number of bio microscopy sites – 2, one in Dumfries, one in Stranraer - whether any independent/external provider is used – No	People with diabetes within Forth Valley are invited to attend an annual retinal screening examination from the age of 12 onwards. There are 2 static photographic sites – Stirling Community Hospital has the capacity to screen 129 patients per week and Forth Valley Royal Hospital has the capacity to screen 153 patients per week. Forth Valley has 3 slit lamp clinics with the capacity to examine 45 patients per week, an OCT clinic with the capacity to examine 13 patients per week and an Ophthalmology clinic which can examine 7 laser	Fundus Photography The service has fixed cameras at Victoria and Queen Margaret Hospitals and a mobile camera which visits 11 further locations Fife At each of the Fixed sites 39 patients are appointed a day and 28 patients appointed at a mobile on average. At the Victoria Hospital and Queen Margret Hospital clinics are run 5 days a week, Mobile locations are governed by the number of patients due and the availability of rooms as 9 of our locations are within GP surgeries. The images are graded and the results sent out.

				patients or 12 review patients per week. There is no mobile service within Forth Valley.	Biomicroscopy If the patient requires biomicroscopy an appointment is made and sent out requesting the patient attend 1 of the 3 sites where we provide biomicroscopy. These are Victoria and Queen Margaret Hospitals plus Cupar Health Centre. Once a patient has been appointed to biomicroscopy they are recalled there every year rather than Fundus Photography. The only exception to this is when they patient are discharged back from ophthalmology. Slit lamp examinations are preformed by the Level 2 graders/ SL examiner. We currently see 20 patients at the Victoria and Queen Margaret Hospitals sites and 17 at Cupar Health Centre
2.2 Cameras Used	22 Topcon TRCNW6 with Nikon D70S 3 Topcon 3D-OCT with Nikon D7000 3 Topcon TRCNW6 with Nikon D80S 1 Topcon TRCNW8 with Nikon D90 1 Kowa Keeler Nonmyd 7 with Nikon AS15	1 Canon CR-DGi fundus cameras with Canon EOS 10D digital back.	4 cameras 3x Topcon TRC NW6S with Nikon D70 1x Topcon TRC NW6S with Nikon D80	There are 2 cameras supplied by Topcon – TRC NW6S with Nikon D70 digital camera backs.	3 x Canon CR-DGI Fundus Camera backs 3 x Canon EOS 20D Digital Camera 2 camera's and backs changed in Feb 13 to 2 x Canon CR-DGI2 Fundus Camera backs 2 x Canon EOS 60D Digital Camera
2.3 Workforce Information	Service Manager 1 Administrator 1 L3 Graders 2 L2 Graders 4 L1 Graders 32 Retinal Photographers 40	1 Service (Programme) Manager 3.9 Administrators 1 screener 4 Level 1 graders 3.8 level 2 graders 3 level 3 graders working part time I ophthalmologist working 0.2	Brief summary of workforce to deliver programme administrators - 0.8 retinal photographers – 3 (2 also L2 graders) graders – 2x L2 + 1x L3 Slit Lamp Examiners – 1 (also screener/grader L2)	The workforce to deliver retinal screening within Forth Valley includes: 6 Part time retinal photographers 3 Part time administrators 2 Level 1/2 graders 1 Level 3 grader 2 Slit lamp examiners	0:2 WTE Level 3 Grader/SL examiners (Associate Specialist attached to service) 1:6 WTE Level 2 grader/SL examiners (0:8 WTE On mat leave from April 12 – Jan 13) 1 :5 Screener/Level 2 grader 1:0 WTE Screener (trainee Level 1 grader) 1:0 WTE System Administrator (Full Time) 1:0 WTE DRS Administrator (30hrs) 0:5 WTE Booking clerk (18.5hrs)

2. Delivery Model					
		Borders	**Dumfries & Galloway**	**Forth Valley**	**Fife**
2.4 Retinal Screeners					
2.5 Retinopathy Graders		B – current screener/grader L2, full time, passed Diploma C - current screener/grader L2, full time, passed Diploma	B – current screener/grader L2, part time, passed Diploma C - current screener/grader L2, part time, passed Diploma D – current screener/grader L2, part time, passed unit 306 still to undertake units 307 & 308	Grader 1 – Current, part-time – Units 301,302, 307 & 308 completed and passed. Qualified in Slit Lamp Accreditation. Grader 2 – Current, part-time – C & G Completed completed. Grader 3 – Current, part-time - C & G not required.	Current 1 x Level 3 Grader (Associate Specialist attached to service) 4x Level 2 Grader pass 303, 307, 308 1 x Full time Level 1 Grader, Commenced July 10 Non-Current
2.6 Slit Lamp Examiners		C - current screener/grader L2, SLE, full time, passed Diploma	C - current screener/grader L2, SLE part time, passed Diploma D – current screener/grader L2, SLE part time, passed unit 306	Examiner 1 – Current, part-time – Level 1-2 grader, Units 301,302, 307 & 308 completed and passed. Examiner 2 – Current, part-time – Level 1-2 grader, C & G units completed and passed	Current 1 x Level 3 Grader (Associate Specialist attached to service) 2 x Part time Level 2 Grader pass 303, 304, 305, 307, 308
2.7 Screening GP practices	57	37	35	57	58

1.1 Health Board Name	Grampian	Greater Glasgow	Highland	Lanarkshire	Lothian
1.2 Programme Board Coordinator	Dr Mike Crilly MD MPH MRCGP MFPHM Senior Lecturer in Clinical Epidemiology University of Aberdeen Medical School Polwarth Building at Foresterhill Aberdeen Scotland AB25 2ZD michael.crilly@nhs.net	Dr Emilia Crighton, DRS Board Co-ordinator Telephone: 0141 2014747 Email: emilia.crighton@ggc.scot.nhs.uk	Vacant	Dr Tasmin Sommerfield Consultant in Public Health Medicine Department of Public Health NHS Lanarkshire 14 Beckford Street Hamilton ML3 0TA 01698 206336 tasmin.sommerfield@lanarkshire.scot.nhs.uk	Dr Katie Dee, katie.dee@nhslothis.scot.nhs.uk
1.3 Accountable clinical lead	Dr John Olson, DRS Service Lead Clinician, David Anderson Building, Foresthill Rd, Aberdeen AB25 2ZP Telephone: 01224 555538. Email: john.olson@nhs.net	Dr Sonia Zachariah, sonia.zachariah@ggc.scot.nhs.uk Dr Mike Gavin, michael.gavin@ggc.scot.nhs.uk	Dr Simon Hewick Consultant Ophthalmologist Simon.hewick@nhs.net	Dr Meena Virdi Consultant Ophthalmologist Lead Clinician for Diabetic Screening Hairmyres Hospital Hairmyres East Kilbride Tel: 01355 584652 Meena.Virdi@lanrkshire.scot.nhs.uk	Dr Karen Madill Consultant Ophthalmologist PAEP ,NHS Lothian Chalmers Street Edinburgh EH3 9HA 0131 533712
1.4 Service Manager	Vacant	David Sawers, Retinal Screening Manager Telephone: 0141 211 4754. Email: david.sawers2@ggc.scot.nhs.uk	Lisa Steele Service Manager, NHS Highland Diabetic Centre, Centre for Health Science, Old Perth Road, Inverness IV2 3JH Email: lisa.steele@nhs.net Tel: 01463 255938	Anne Dougan Retinal Screening Team Leader Administration Office Administration Building Coathill Hospital Coathill Coatbridge ML5 4DN 01236 707150 Ann.Dougan2@lanarkshire.scot.nhs.uk	Ms Norah Grant DRS Service Manager E3, PAEP, Chalmers Street Edinburgh EH3 9HA Norah.grant@luht.scot.nhs.uk 0131 536 3928
1.5 Location	David Anderson Building Foresterhill Road Aberdeen AB25 2ZP	Administrative centre address – Screening Department, 1st Floor, Building 2, Templeton Business Centre, 62 Templeton Street, Glasgow G40 1DA	Diabetic Retinal Screening Centre for Health Science Old Perth Road Inverness IV2 3JH Tel Patient Booking Services on 0800 5877198	Administration Office Administration Building Coathill Hospital Coathill Coatbridge ML5 4DN 01236 707160 / 0845 337 3341	DRS Service E3, PAEP, Chalmers Street Edinburgh EH3 9HA 0131 536 4145
1.6 Referral Centres	Aberdeen Eye Clinic, Foresterhill Hospital. Dr Grays Hospital Elgin. Chalmers Hospital Banff. Jubilee Hospital Huntly. Turner Hospital Keith. Seafield Hospital Buckie.	Ophthalmology Departments at the following – Stobhill Hospital, Victoria Infirmary, Southern General Hospital – all in Glasgow Royal Alexandra Hospital, Paisley; Inverclyde Royal Hospital, Greenock; Vale of Leven District General Hospital.	North Highland patients are referred to: Raigmore Hospital Inverness but can be seen at any of the peripheral hospital sites in Golspie, Wick, Fort William and Portree, depending on the nearest venue and treatment required. Argyll & Bute patients are referred to: Campbeltown Hospital Dumbarton Health Centre Dunaros Hospital, Isle of Mull Dunoon General Hospital Inverclyde Royal Hospital, Greenock Mid Argyll Hospital, Lochgilphead Victoria Hospital, Rothesay Lorn & Isles DGH, Oban Gartnavel General, Glasgow Southern General, Glasgow	Ophthalmology Department Hairmyres Hospital Eaglesham Road East Kilbride Ophthalmology Department Wishaw General Hospital Netherton Road Wishaw Ophthalmology Department Monklands District General Hospital Monkscourt Drive Monklands Airdrie	Princess Alexandra Eye Pavilion, Edinburgh St. John's Hospital, Livingston.

1.7 Biomicroscopy arrangements	Technical failure examinations are performed at the following locations: All Aberdeen City residents are assessed at the David Anderson Building. Moray patient are offered a location closer to home and can may be booked into any of following venues: Leanchoil Hospital Forres. Dr Grays Hospital Elgin Jubilee Hospital Huntly Chalmers Hospital Banff Seafeild Hospital Buckie Turner memorial; Hospital Keith	People with unobtainable or un-gradable images are assessed by slit-lamp biomicroscopy. These clinics are held weekly at Gartnavel General Hospital, Victoria Infirmary, Southern General Hospital and Glasgow Royal Infirmary – all in Glasgow, New Sneddon Street Clinic, Paisley and as required at Greenock Health Centre and Vale of leven Distric General Hospital. Ophthalmologists deliver the slit lamp clinics at Glasgow Royal Infirmary and at Royal Alexandra Hospital, Paisley. Al slit lamp clinics are delivered by optometrists or by a nurse trained in slit lamp examination.	North Highland patients are referred to an Optometrist based slit lamp clinic in the following sites, depending on their nearest venue for referral: At Centre for Health Science, Inverness Lawson Memorial Hospital in Golspie Portree Hospital Belford Hospital in Fort William Caithness General Hospital in Wick Argyll & Bute patients are referred for a slit lamp examination into the Ophthalmology departments detailed above at item 1.6.	Patients with a status of technical failure following photography, receive a letter to inform them that images taken are ungradable and they have been put on a waiting list to have slit lamp examination carried out. There is a slit lamp service at each of the 3 static sites. There is 3 sessions of slit lamp carried out at each of the 3 static sites. (a total of 24 patients each week per site) = wte 0.3 per site. Technical failure at slit lamp will result in the patient being referred to ophthalmology. The slit lamp clinics see patients for recall and patients who are newly referred to slit lamp. The slit lamp clinics are run by Registered Nurses who have undergone specialised training in slit lamp examination. The slit lamp clinics can be increased or decreased depending on demand as it is organised wholly within the Diabetes Retinal Screening Service.	An appointment is made for patients in a slit lamp clinic at one of the locations below, based on where they live. St John's hospital, Livinston PAEP, Edinburgh Roodlands Hospital, Haddington.
1.8 Health Board GP Practices	83	Approx 274	North Highland = 67 A&B = 34 Total GP practices = 101	98	126
1.9 Screening GP Practices	83	Approx 274	<u>North Highland</u> Patients are invited from the 12 Inverness based GPs to come for screening at DRS in Centre for Health Science, Inverness. DRS provide a mobile clinic based at the remaining 55 GP sites or nearest community hospital. <u>Argyll & Bute</u> DRS provide a mobile clinic based at three of the GP practices which are not accessible to a High Street Optometrist in the area. DRS control recall of patients for all 101 practices but in Argyll & Bute the remaining 31 practices have their patients invited to the nearest participating High Street Optometrist practice for screening.	98	126

2. Delivery Model					
	Grampian	**Greater Glasgow**	**Highland**	**Lanarkshire**	**Lothian**
2.1 Programme structure/ model	Screening is delivered through a combination of both mobile and static screening venues. The static site is used to screen patient who live within the City boundary. The mobile screening clinic visits GP practices in Aberdeenshire and Moray. Screening is carried out within the practice. Vehicles are for transportation of equipment only. One Static Site Three Mobile units Six slit lamp sites No independent or external provider is used.	All diabetics are initially appointed to a photography screening clinic. These are held at 4 hospital sites and at 17 other sites – clinics, health centres, screening vans, and GP surgeries. 5 of the photography sites are generally in use 52 weeks/year, and the other 16 sites are used as required, from 4 – 25 weeks/year. Optometrists are not used to deliver photography clinics. Diabetics who have unobtainable or ungradable images at photography are assessed by slit-lamp biomicroscopy. (If at the slit lamp clinic it is felt that gradeable images can be obtained in future then the diabetic's next appointment will be for photography.) Slit lamp biomicroscopy is delivered weekly at 4 hospital sites and at one other clinic site and less frequently at one other hospital site and at one other health centre site.	**North Highland** Static photographic sites = 1 based at DRS in CFHS, Inverness. **North Highland continued** Mobile clinics carried out at 55 GP locations in North Highland and/or nearest community hospital depending on room availability at the GP site. Photography is carried out by two full time NHS Highland retinal screeners. Slit lamp provision is provided at five sites detailed in item 1.7 and is carried out by an NHS Highland Optometrist. **Argyll & Bute** Mobile clinics are carried out at 3 GP sites in the area; Rothesay, Tignabruaich and Lochgoilhead. This is covered by the NHS Highland retinal screening team from Inverness. The remaining areas are serviced by static photographic sites provided via external contractors who are professionally qualified High Street Optometrists. The area is split into 8 sites:- Oban, Lochgilphead, Campbeltown, Tarbert, Helensburgh, Dunoon, Isle of Islay and Isle of Mull. Over the 8 sites, there are 15 registered external Optometrists providing photographic screening only. Slit lamp referrals for the Argyll & Bute area are seen across the 10 Ophthalmology sites detailed in item 1.6.	Administration office is responsible for booking, cancelling appointments. To improve patient attendance office staff are responsible for reminder phone calls to patient on week of appointment. Telephone helpline is open from 9am to 12md and from 1.30pm to 3.30pm. There are 4 static sites in Lanarkshire, which are Buchanan Centre in Coatbridge, Wishaw Health Centre in Wishaw and Central Clinic in Hamilton. There is a satellite site in Central Health Centre in Cumbernauld. Each of the main sites has 2 fundus cameras and 1 slit lamp. Cumbernauld has 1 fundus camera.	The programme is delivered using 3 static cameras, located in the main Diabetic Out Patient Departments, and 3 mobile cameras in a variety of GP Practices and Health Centres. The screeners are photographers employed by the NHS. All of the screeners in Lothian also grade at either level 1 or level 2. Slit lamp bio-microscopy is done in 3 hospital sites (see 1.7 above) and is done by a mix of NHS employees (currently optometrists and ophthalmologists though 2 of our photographers are in the process of training for this) and community optometrists paid by the session.
2.2 Cameras Used	2 new Canon CR2 digital retinal camera's 2 canon CR1 digital retinal camera's with 50 D digital back	Fundus cameras – 4 x Canon CR2, 5 x Canon CR-DGI, 4 x Canon CR6	**North Highland** 1x Canon CR6 45NM Serial No: 300621/Canon EOS 20D	7 x Retinal Camera Fundus Topcon NW6S 7 x Nikon AS15	6 Canon CR-DGi fundus cameras with Canon EOS 10D digital backs.

		Digital backs – 4 X Canon EOS Retina back, several Canon D30, 10D and 20D	1x Canon DGI Serial No: 310325/Canon EOS 20D 1x Canon DGI Serial No: 311286/Canon EOS 20D **<u>Argyll & Bute</u>** 1x Topcon NW65 Serial No: 2881612/Nikon D90 1x Keeler Kowa NonMyd 7 Serial No: 1602600062/Nikon D80 1x Keeler Kowa NonMyd 7 Serial No: 160260068/Nikon D80 1x Keeler Kowa NonMyd 7 Serial No: 1602600049/Nikon D80 1x Keeler Kowa NonMyd 7 Serial No: 1602600091/Nikon AF15 1x Keeler Kowa NonMyd 7 Serial No: 1602600057/Nikon D80 1x Topcon TRC/NW6S Serial No: 2881259/Nikon D80 1x Topcon NW6S Serial No: 2880004/Nikon D80 1x Topcon NW6S Serial No: 2881374/Nikon D80 1x Topcon NW6S Serial No: 2881347/Nikdon D80 1x Canon DGI Serial No: 311531/Canon 40D 1x Canon DGI Serial No: 300343/Canon 40D 1x Canon DGI Serial No: 311525/Canon 40D 1x Topcon NW6 Serial No: NK 1x Topcon NW8 Serial No: NK	3 x Nidek SL 450 biomicroscopy	
2.3 Workforce Information	<u>2 Admin staff = 2 wte</u> Administrators x 1 full time receptionist Administrators x 1 full time Both current	The service has – 1 service manager 1 nurse co-ordinator 8 (6 wte) admin staff 10 (9.0 wte) retinal photographers 1 (0.6wte) photographer/level 1 grader 4 (3.4 wte) photographers/level 2 graders 4 (1.1 wte) slit lamp examiners/level 2 graders 1 associate specialist ophthalmologist (0.8 wte) and 2 consultant ophthalmologists (approx 1 session/week	Service Manager: 1 Administrators: 0.5 Retinal Screeners: 1 x full time and 1 x 0.5 wte External Photographer/Screeners: 15 Slit Lamp Examiner: 2 x 0.5 wte (North Highland only) All grading work is provided externally by the grading centre in NHS Grampian.	Administration Assistant Band 2 1wte Administration Officer Band 3 1wte Retinal screener Band 3 0.8 wte Retinal screener Band 4 1wte Retinal Screener Band 4 1wte Retinal Screening Nurse Band 5 0.56wte	1 Service (Programme) Manager 5 Administrators 3 screeners 4 Screeners/Level 1 graders 4 screeners/level 2 graders 3 level 3 graders 1 employed optometrist plus 2 community optometrists working as needed at slit lamp plus 2 ophthalmologist. working

		each)		Retinal Screening Nurse Band 5 0.69wte Retinal Screening Sp Nurse Band 6 0.8 Retinal Screening Sp Nurse Band 6 0.53 Retinal Screening Team Lead Band 7 1wte	as needed at slit lamp .
2.4 Retinal Screeners	9 named screening staff = 8 wte (including service manager) all participate in photographic screening sessions as required to meet service needs. All current	6 screeners have completed the C&G Certificate	Retinal Screeners: 1 x full time and 1 x 0.5 wte completed full diploma	Both band 4 retinal screener have completed City and Guilds diploma in retinal screening 2.8 wte spent on retinal photography	1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 0.6 screener/Level2 nil C&G accreditation 1.0 screener/Level2 306 1.0 screener/Level2 nil C&G accreditation 1.0 screener/Level2 306 All of the above staff members are current.
2.5 Retinopathy Graders	**Level 3 graders x 2 named = (0.3 wte)** Level 2 graders – four staff from the screening team mentioned above, participate in level 2 grading, as required to meet service needs.(including service manager) All current All L2 Graders have completed the City and Guilds diploma.	Photographer/grader 1 – current, 0.6 wte, grading at level 1, passed units 302, 304, 306 and 307 Photographer/grader 2 – current, 0.9 wte, grading at level 2, passed units 306 & 308 Photographer/grader 3 – current, 0.5 wte, grading at level 2, completed DRS Diploma Photographer/grader 4 – current, full time, grading at level 2, completed DRS Diploma Photographer/grader 5 – current, full time, grading at level 2, completed DRS Diploma Ophthalmologist 1 – current, 0.8 wte, grading at level 3 Ophthalmologist 2 – current, 0.1 wte,	Grading services provided externally via SLA with NHS Grampian.	1.Retinal Screening Nurse (0.56 wte) 0.4wte photography 0.1 wte 2nd level grading 0.6 wte slit lamp training. 2. Retinal Screening Nurse (0.69wte) 0.4wte photography 0.2 wte 2nd level grading 0.9 wte slit lamp examination 3.Retinal Screening Specialist Nurse (0.8wte) 0.3wte photography 0.2wte grading 0.3wte slit lamp examination 4.Retinal Screening Specialist Nurse (0.53)	1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 1.0 screener/Level 1 nil C&G accreditation 0.6 screener/Level2 nil C&G accreditation 1.0 screener/Level2 306 1.0 screener/Level2 nil C&G accreditation 1.0 screener/Level2 306 0.2 Level2 + slit lamp nil accreditation

		grading at level 3 Ophthalmologist 3 – current, 0.1 wte, grading at level 3		0.2wte grading 0.3wte slit lamp examination 0.03wte Ophthalmic letters/office/orders 5.Retinal Screening Team Leader (1wte) 0.1wte grading 0.3wte slit lamp examination 0.1wte slit lamp training 0.3wte clinical management 0.2wte office/staff management (cover all types of clinics during staff shortage) All trained nursing staff have completed Diploma in Retinal Screening.	0.2 Level2 + slit lamp nil accreditation **no longer employed** 3 x level 3; P/T, ophthalmologists All of the above staff members are current unless otherwise stated and are shared with Borders.
2.6 Slit Lamp Examiners	Slit lamp examiners - 3 staff from the screening team, participate in slit lamp examination as required to meet service needs (including service manager) . All are level 2 graders and have completed the city and guild diploma All Current	SLE 1 & 2 have completed units 301,302,307 & 308 SLE 3 has completed units 301, 302 & 308 SLE 4 has completed unit 301	Slit Lamp Examiner: 2 x 0.5 wte (North Highland only) one fully accredited and one pending.	See above. 4 slit lamp examiners have completed in service training and adhere to National Guidelines to ensure registration for slit lamp is up to date. E.g. visit ophthalmologist from outside own board for testing and complete grading standards and see at least 200 slit lamp patient/year.	0.1 optometrist nil C&G accreditation **no longer employed** 0.2 optometrist + level 2 grader nil C&G accreditation P/T community optometrist nil C&G accreditation P/T community optometrist nil C&G accreditation P/T ophthalmologist + level 3 grader P/T ophthalmologist Unless stated the above are all current staff.
2.7 Screening GP practices	83	Approx 274	101 as per item 1.8.	98	126

1. Programme Information				
1.1 Health Board Name	**Orkney**	**Shetland**	**Tayside**	**Western Isles**
1.2 Programme Board Coordinator	Louise Wilson Louise.wilson2@nhs.net	Vacant	Dr Julie Cavanagh DRS Board Coordinator Consultant in Public Health Directorate of Public Health King's Cross Clepington Road Dundee DD3 8EA 01382 425684 julie.cavanagh@nhs.net	Christina Morrison Health Protection and Screening Nurse Specialist NHS Western Isles 01851 708046 christina.morrison@nhs.net
1.3 Accountable clinical lead	Post vacant	Dr Pauline Wilson, Consultant Physician Email: paulinewilson@nhs.net Phone: 01595-743000 extension 3226	Dr John Ellis DRS Clinical Lead John.ellis@nhs.net	Vacant
1.4 Service Manager	Nickie Milne, DRS Administrator, Assessment and Rehabilitation Office, Balfour Hospital, Kirkwall. Nichola.milne@nhs.net 01856 888023	Alison Irvine, Diabetic Specialist Nurse, Gilbert Bain Hospital, Lerwick. Email: alison.irvine@nhs.net Phone: 01595-743000 extension 3444.	Mrs Samantha Creamer DRS Programme Manager Diabetic Retinopathy Screening Programme Diabetes Support Centre Level 8 Ninewells Hospital Duundee DD1 9SY 01382 740068 screamer@nhs.net	Christina Morrison Health Protection and Screening Nurse Specialist NHS Western Isles 01851 708046 christina.morrison@nhs.net
1.5 Location	Assessment and Rehabilitation Office, Balfour Hospital, Kirkwall. 01856 888023	Gilbert Bain Hospital, Lerwick. Contact number: 01595-743000 extension 3030	Diabetic Retinopathy Screening Programme Diabetes Support Centre Level 8 Ninewells Hospital Duundee DD1 9SY	The Diabetes Centre, Western Isles Hospital HS1 2AF
1.6 Referral Centres	Visiting Highland Ophthalmology Service held in Balfour Hospital, Kirkwall, Orkney	Gilbert Bain Hospital and Aberdeen Royal Infirmary (ARI)	Ninewells Hospital, Dundee Arbroath Infirmary Montrose Links Health Centre	Ophthalmology Clinic Out-Patient Department Western Isles Hopsital/ Uist &

			Stracathro Hospital Perth Royal Infirmary	Barra Hospital
1.7 Biomicroscopy arrangements	At present all patients requiring slit-lamp assessment is referred to the visiting Ophthalmology Service and is seen within their Out-patient Eye Clinic which is held on a monthly basis at Balfour Hospital, Kirkwall.	Gilbert Bain Hospital with visiting Slit Lamp Nurse from ARI	1x Ophthalmologist Slit Lamp clinic per week based at Ninewells Hospital 1x Ophthalmologist Slit Lamp clinic per week at Perth Royal Infirmary All Angus clinics undertaken by Specialist Screeners Montrose Links Centre x2 per annum Arbroath Infirmary x3 per annum Stracathro Hospital x3 per annum	R Doig Optometrist Ltd 36 Kenneth Street Stornoway R Doig Optometris Ltd Rathad Mhic Eoine Balivanich Benbecula Uist
1.8 Health Board GP Practices	15	10	68	10
1.9 Screening GP Practices	15	10	68	10

2. Delivery Model				
	Orkney	**Shetland**	**Tayside**	**Western Isles**
2.1 Programme structure/ model	Screening is delivered on one site which is within the Balfour Hospital. We have one static retinal camera. We have two Retinal Screening Technician who delivers approximately one clinic per week. All slit-lamp patients are seen by the visiting Ophthalmology Service and their information is passed back to the retinal screening administration. Our grading is provided from NHS Tayside.	We have 1 static photographic site and no biomicroscopy sites. We do not use any independent/external provider. OCT machine used to monitor patients with M2.	• Two permanat static sites. One mobile unit which can be a 'transportable' system ie has a side lift so that equipment can be taken off the mobile unit and set up in a temporary static site. The same unit can also be used as a mobile unit. Second mobile unit is used for this purpose alone. • Five biomicroscopy sites Have an SLA with NHS Tayside Department of Ophthalmology to provide slit lamp service.	NHS Western Isles have contracted with R Doig Optometrist Ltd to provide image capture and slit lamp examinations. He has 2 cameras and 2 static sites, one in Stornoway(Lewis) and one in Benbecula (Uist). He is contracted to provide a peripatetic service and a domiciliary service. Patients are invited to make an appointment with R Doig Optometrist Ltd for their image capture. GPs can request a home visit for patients that are unable to go to either of R 'Doig Ltd premises. Screening is also provided for patients who are in hospital or nursing homes NHS Western Isles have a contract with NHS Tayside to provide Level

				1-3 Grading
2.2 Cameras Used	We have one camera. Canon EOS 20D with CR-DGi at present we do not have any back up digital camera or Fundus camera.	We use a Canon 10 D.	Serial Number Canon CR6-45NM Non-Mydryatic Retinal Camera 300570 Canon CR6-45NM Non-Mydryatic Retinal Camera 300654 Canon CR-DGi Non-Mydryatic Retinal Camera 310708 Canon CR-DGi Non-Mydryatic Retinal Camera 310368 Canon EOS-20 Digital Camera 14209103 Canon EOS-20 Digital Camera 19210113 Canon EOS-20 Digital Camera 14309090 Canon EOS-20 Digital Camera 15309056	2 Fundus Cameras Nokia D70s Topcon TRC NW6
2.3 Workforce Information	At present we have two members of staff within the retinal screening programme in Orkney who delivers all the administration, screening and co-ordination of the service.	We have 1 administrator (15 hours per week) and 1 retinal photographer (15 hours per week). We do not have any graders. We have a visiting Slit Lamp Nurse from ARI every 3 months.	0.2WTE 2x Level 3 Grader/SL examiners 1.0 WTE Programme Manager - SL examiner, Level 2 grader, photographic screener 1.0 WTE Specialist Screener- SL examiner, Level 2 grader, photographic screener 1.0 WTE Senior Screener - Level 2 grader, photographic screener 1.8 WTE Screeners - training in Level 1 grading 0.8 WTE Camera Operator (yet to be appointed) 1.8 WTE Administrators 0.5 WTE Booking clerk	<u>NHS Western Isles</u> 1 Part Time Administrator 1 Part Time Service Manager 1 Part Time board Co-ordinator <u>R Doig Optometrist LTD</u> 4 Screeners 1 Slit lamp examiner(Optometrist) <u>NHS Tayside</u> Level 1-3 Grading
2.4 Retinal Screeners	For each retinal photographer who has worked in your programme at any time in the reporting period provide the following pseudo-anonymised information. This information should reflect the status at the 31st March at the end of the reporting period:	Current *1 (Part Time)* /Non-current *0* 301 passed	1 - 10 years in post, full DRS Diploma 2 - 8 years in post, full DRS Diploma 3 - 5 years in post, full DRS Diploma 4 - 1 year in post, enrolled in DRS Diploma 5 - 4 years in post, units 1-6 DRS Diploma	4 Screeners All working through the City & Guild Units with 3 having completed the City & guilds units.

	Current employment Part Time – 27 hours per week Part time – 7.5 hrs per month Not completed City and Guilds modules.			
2.5 Retinopathy Graders	Grading services are contracted to Tayside.	N/A as all grading is completed in NHS Grampian	1 - as above 2 - as above 3 - as above 4 - as above 5 - as above	Grading contracted to NHS Tayside
2.6 Slit Lamp Examiners	Not applicable as slit-lamp service at present delivered by Highland Ophthalmology Consultants	From NHS Grampian - ARI	1 - 0.4 WTE Ophthalmologist, level 3 grader 2 - 0.1 WTE Ophthalmologist, level 3 grader 3 - 0.2 sessions per week, level 2 grader 4 - 0.1 sessions per week, level 2 grader	1 Slit Lamp Examiner - R Doig Optometrist LTD
2.7 Screening GP practices	15	10	68	10

Appendix F – DRS Annual Report 2018 – Training report -

New Pearsons L3 qualification for screening staff

With regards to the new qualification, we now have 4x Assessors and 2x Internal Verifiers. At present (May 2019) we have currently 7 registered candidates for the qualification meantime. This decision was taken due to the number of assessors that we had at the time. We would not have had enough assessors if we had registered any more candidates. We will be moving forward with the 7 candidates. Once we have been able to complete training of the new assessors and internal verifiers we will then begin registering the other candidates which is expected to be in a couple of months. However the registration of the other candidates will be prioritised according to job role, knowledge & skills etc. This is primarily because we have candidates who haven't done any qualifications, candidates who have partially completed C& G and some other qualifications.

Costs and payments.

We have now received invoices for the first 7 candidates registered. However when we received the invoices we have noted that Pearson's (awarding body) have included VAT with the cost. When the course negotiations originally took place they had given us a costing but had not included VAT. The cost of registering with Pearson's is £142 + VAT. This does not include the cost of the Proof Positive licence (electronic system for candidates to upload their evidence and work for the qualification). The cost of the Proof Positive licence is circa £30. This means that the final cost per candidate will work out to be approx **£200** rather than the £170 we originally thought. We are however contacting Pearson's to see if the VAT is reclaimable for educational courses/ training. If it is then Boards would be able to claim this back.

Once candidates are registered for the qualification the candidate's Board will receive an invoice for payment for Pearson's. Boards will also receive a further invoice from Greater Glasgow and Clyde Education and Learning Department which will be for the Proof Positive licence.

Fiona Heggie – DRS training coordinator

Appendix H – RIS and OCT Business case – Executive Summary –

In 2016 United Kingdom (UK) National Screening Committee (NSC)[1] recommended revised screening intervals for patients within the Diabetic Retinopathy Screening (DRS) Programme. The UK NSC recommended that for patients with diabetes at low risk of sight loss, the interval between screening tests should change from one year to two years. The current one year interval should remain unchanged for the remaining people at high risk of sight loss. Subsequently, the Scottish Screening Committee (SSC) approved the proposal made by National Services Division (NSD) to take forward the development of a business case for a revised interval screening for the DRS Programme. Following the approval of the NSD proposal, the Scottish Government (SG) commissioned the services of National Services Scotland (NSS) Programme Management Services (PgMS) to produce this business case.

A Short Life Working Group (SLWG) of relevant stakeholders was established to progress this work. This business case therefore discusses the outcome of the exploration undertaken by the SLWG and presents the capital and revenue requirements of the preferred option of revised interval screenings for the DRS Programme as recommended by the UK National Screening Committee (NSC)[2] along with the introduction of a surveillance cycle based on Optical Coherence Tomography (OCT) under the auspices of the DRS Programme.

Key challenges facing DRS in Scotland

Non-compliance with 2016 UK NSC recommendations.

Ability to meet the principles within Realistic Medicine[3].

Lack of specificity of referrals from DRS Programme to Ophthalmology services (90% of referrals inappropriate).

Difficulty in patients accessing Ophthalmology services due to lengthy waiting times which result in delays in diagnosis and/or treatment and subsequently poorer patient outcomes. 31% of new patients are currently waiting longer than 12 weeks for their first appointment to see an Ophthalmologist[4].

Workforce shortages in Consultant Ophthalmology[5].

A 5% increase per annum in prevalence of Diabetes resulting in 5% increased service demand.

Unwarranted variation in practice regarding frequency and location of OCT surveillance.

[1] (2016) The 2016 UK NSC recommendation on Diabetic Retinopathy screening in adults https://legacyscreening.phe.org.uk/diabeticretinopathy

[2] ibid

[3] (2014/15) Realistic Medicine: CMO's Annual Report: http://www.gov.scot/Resource/0049/00492520.pdf

[4] Source: (May 2018) ISD National Waiting Times Data Mart IR query IR2018-00825

[5] Source: Lead Clinician DRS Programme stated 14 vacant Consultant Ophthalmologist posts across Scotland – June 2018

Appendix I – DRS Annual Report 2018 – Patient Information Leaflet

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What screening results might I get?

If any slight changes to your eyes are found, you may be asked to return for a further appointment in 6 months' time.

Your results may show that you need further investigation or treatment. The hospital eye clinic will contact you with an appointment.

If the quality of the photograph is not good enough, you will be asked to return for a further examination.

Diabetic retinopathy screening is part of managing your diabetes. Diabetic retinopathy is usually treatable, especially if caught early.

Only authorised staff and appropriate healthcare professionals have access to information about your screening results. If you need more information about NHS record-keeping, you can phone the NHS inform helpline free on **0800 22 44 88** (textphone 18001 0800 22 44 88). The helpline is open every day, please check the website for the opening hours. It also provides an interpreting service.

How can I reduce the risk of developing diabetic retinopathy?

- Control your blood glucose as effectively as possible.
- See your doctor regularly to check your blood pressure is not raised.
- Attend your diabetic retinopathy screening appointments.
- Visit your optometrist if you have a problem with your sight.
- Take your medication as prescribed.

Where can I get more information?

Your invitation letter has more details about what you need to do next. You can also find out more by visiting:

NHS inform:
www.nhsinform.scot/drsscreening

My Diabetes My Way:
www.mydiabetesmyway.scot.nhs.uk

Diabetes UK Scotland:
www.diabetes.org.uk/scotland
Or phone the Diabetes UK Careline **0345 123 2399** (calls charged at local rate)

This leaflet explains what diabetic retinopathy is and why getting screened is important.

NHS SCOTLAND

Your guide to **diabetic retinopathy screening**

This resource may also be made available on request in the following formats:

0131 314 5300
nhs.healthscotland-alternativeformats@nhs.net

Published by NHS Health Scotland
1 South Gyle Crescent
Edinburgh EH12 9EB

First published 2013

Originally produced by the NHS Diabetic Eye Screening Programme, Public Health England.

NHS Health Scotland is a WHO Collaborating Centre for Health Promotion and Public Health Development

www.healthscotland.scot

DIABETES UK

optometryscotland

Healthier Scotland

V1_10.04.17_4435

What is diabetic retinopathy?

This condition occurs when diabetes affects the small blood vessels in the retina, which is at the back of the eye. The blood vessels in the retina can leak or become blocked.

This condition may cause blindness or serious damage to your eyesight. In its early stages there are no symptoms so you may not realise that you have diabetic retinopathy.

Why should I be screened?

If you have diabetes then screening is important because your eyes are at risk of damage from diabetic retinopathy. Screening is a key part of your diabetes care and can reduce that risk by detecting the condition early, before you notice any changes to your sight.

Untreated diabetic retinopathy is the most common cause of sight loss in people of working age. When the condition is caught early, treatment is effective at reducing or preventing damage to your sight.

How often will I be offered screening?

Screening is offered every year to anyone with diabetes aged 12 and over.

What will happen at my screening appointment?

1. Photographs are taken of the back of your eyes. The camera does not come into contact with your eyes. All photographs are then carefully examined for signs of retinopathy.
2. Around **1 in 4** people may need to be given eye drops so that a good photograph can be taken.
3. The appointment will normally last approximately **10 minutes** (it may take **30 minutes** if eye drops are used).
4. Your results letter is sent to you and your GP (and your hospital diabetes clinic, if you attend one) within **4 weeks**.

Bring all the glasses and contact lenses you wear with you, as well as lens solution for contacts.

Are there any side effects?

If eye drops are used, there may be some side effects:

- Your eyes may sting briefly.
- Your eyes are likely to become sensitive to bright light, so you may want to bring sunglasses to wear afterwards.
- You may experience blurred vision and it is not recommended that you drive for a few hours after the appointment. You should make alternative arrangements for getting home safely.

By law, you should not drive if you cannot read a number plate clearly from 20 metres.

Will I still need to have a regular eye test at the optometrists?

Yes, you need to do both. Your screening photographs will either be graded by a health professional or an automated grading system to detect diabetic retinopathy but not any other eye conditions. You should continue to visit your optometrist regularly for a free eye check as well.