Wrightington, Wigan and Leigh NHS
NHS Foundation Trust

DESP Extra Images Audit

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Extra Images Audit

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What is Diabetic Eye Screening

Everyone with diabetes who is 12 years old or over is invited for eye screening once a year.

Screening is offered because:

- Diabetic retinopathy doesn't tend to cause any symptoms in the early stages
- The condition can cause permanent sight loss if not diagnosed and treated promptly
- Screening can detect problems in Patients eyes before they start to affect their vision and if caught early, treatment can help prevent or reduce vision loss

The screening test involves examining the back of the eyes and taking photographs

Depending on the patients result they may be advised to return for another appointment a year later, attend more regular appointments or discuss treatment options with a specialist.

How diabetes can affect the eyes

The retina is the light-sensitive layer of cells at the back of the eye that converts light into electrical signals. The signals are sent to the brain which turns them into the images you see

The retina needs a constant supply of blood, which it receives through a network of tiny blood vessels. Over time, a persistently high blood sugar level can damage these blood vessels in three main stages:

- Tiny bulges develop in the blood vessels, which may bleed slightly but don't usually affect your vision – this is known as **Background Retinopathy**
- More severe and widespread changes affect the blood vessels, including more significant bleeding into the eye – this is known as **Pre-Proliferative Retinopathy**
- Scar tissue and new blood vessels which are weak and bleed easily, develop on the retina – this is known as **Proliferative Retinopathy** and can result in loss of vision

However, if a problem with your eyes is picked up early, lifestyle changes and/or treatment can stop it getting worse.

The National Screening Committee

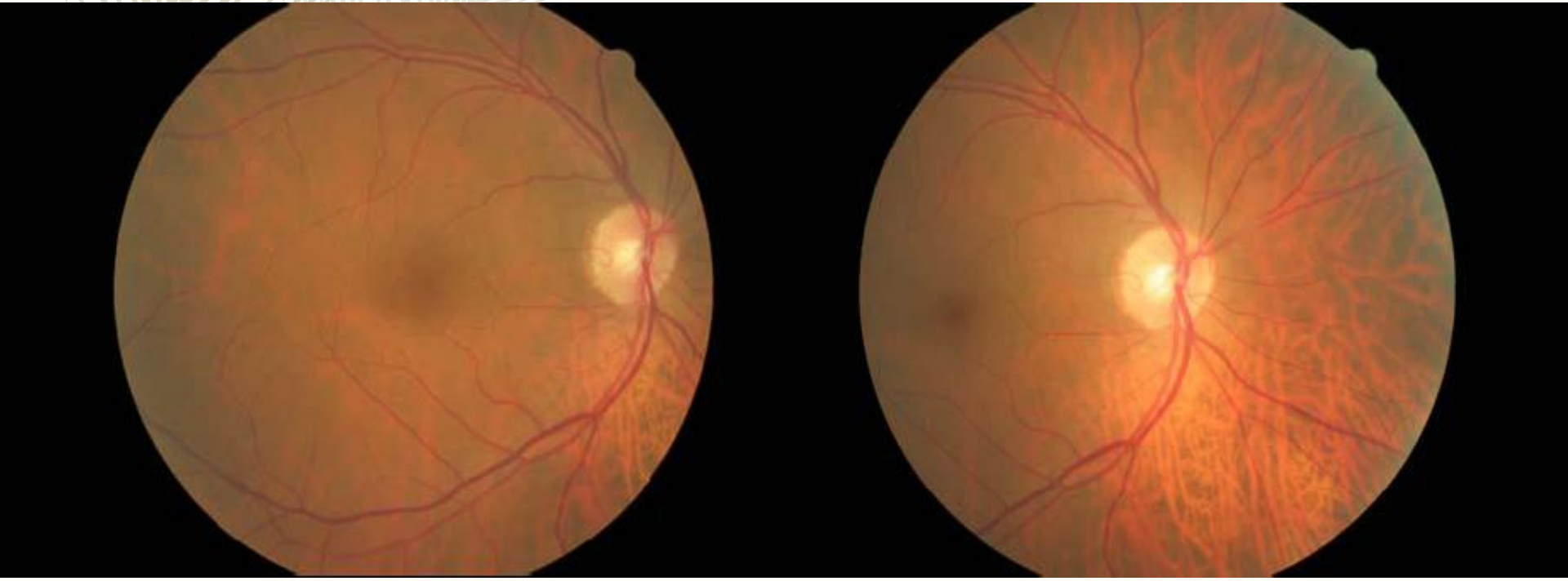
Set out guidelines of images that should be taken at Diabetic Retinopathy Eye Screening

They are as follows

National screening committee
Guidelines for images

Macula image ;
Centre of fovea <1DD of centre of image
& vessels clearly visible within 1 DD of centre of fovea
& vessels visible across >90% of image

Disc image ;
Centre of disc <1DD from centre of image
& fine vessels clearly visible on surface of disc
& vessels visible across >90% of image



Standard Feature Based Grading Form to be used in Routine Screening

R0 None No DR

R1 Background

1 -4 microaneurysm *
5+ microaneurysms
Retinal haemorrhage(s)
Venous loop
Any exudate in the presence of other features of DR
Any number of cotton wool spots (CWS) in the presence of other features of DR

R2 Pre-proliferative

Venous beading
Venous reduplication
Multiple blot haemorrhages
Intraretinal microvascular abnormality (IRMA)

R3S Stable post treatment proliferative DR

Stable fibrous proliferation
Stable R2 features
R1 features

R3 Proliferative active DR

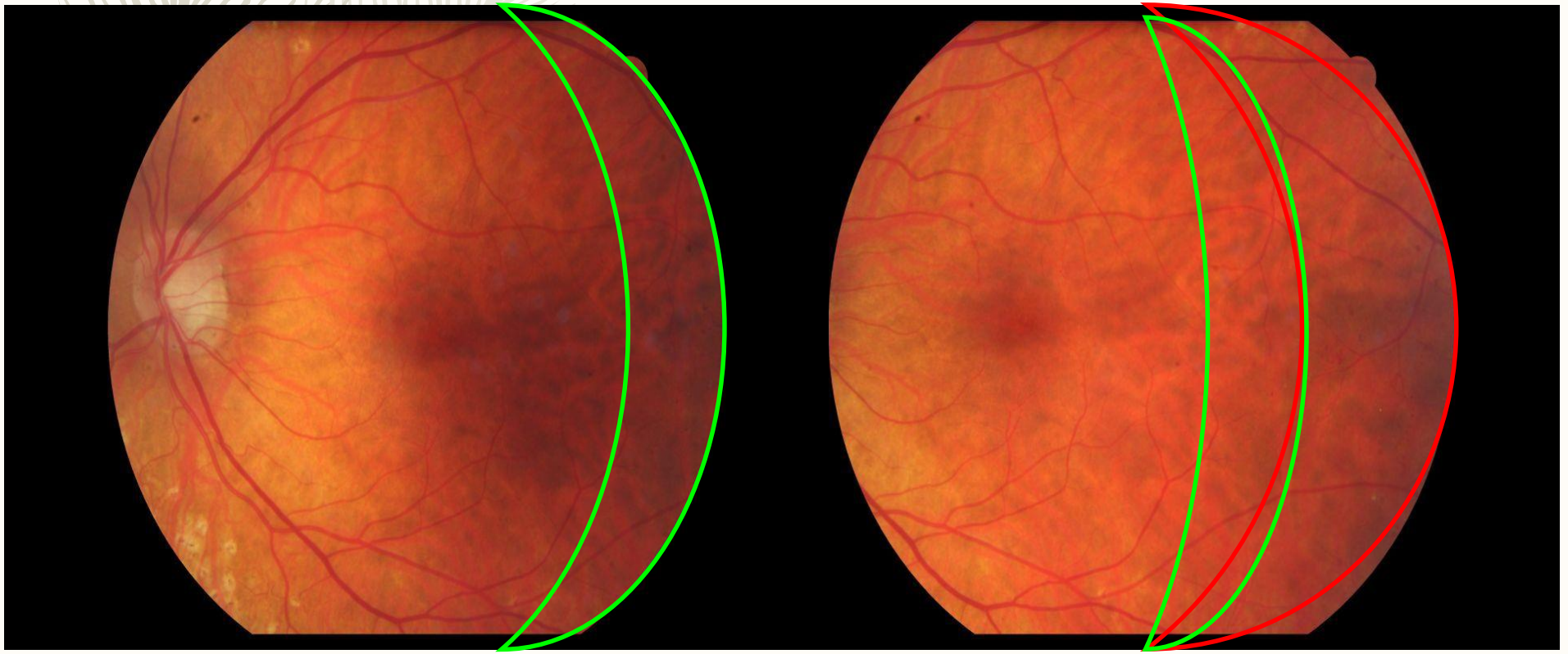
New vessels on disc (NVD)
R3a (Active Proliferative Retinopathy)
New vessels elsewhere (NVE)
New pre-retinal or vitreous haemorrhage
New pre-retinal fibrosis
New tractional retinal detachment
Reactivation in a previous stable R3s eye

Why extra images

- When a patient comes for retinal screening, the screener will take the standard images set out by the NSC
- If the screener detects advanced disease or disease on the edge of the image (we call this the Watershed Area) , the Screener will take extra images so more of the retina is seen to help with the grading process
- More and more we found that the extra images were a great help in finding advanced disease and this seemed to be more so in type 1 diabetics
- Screener/graders discussed in MDT the benefits of taking extra images so we decided to trial an extra image protocol of all Type 1 patients

The watershed area is shown in green area

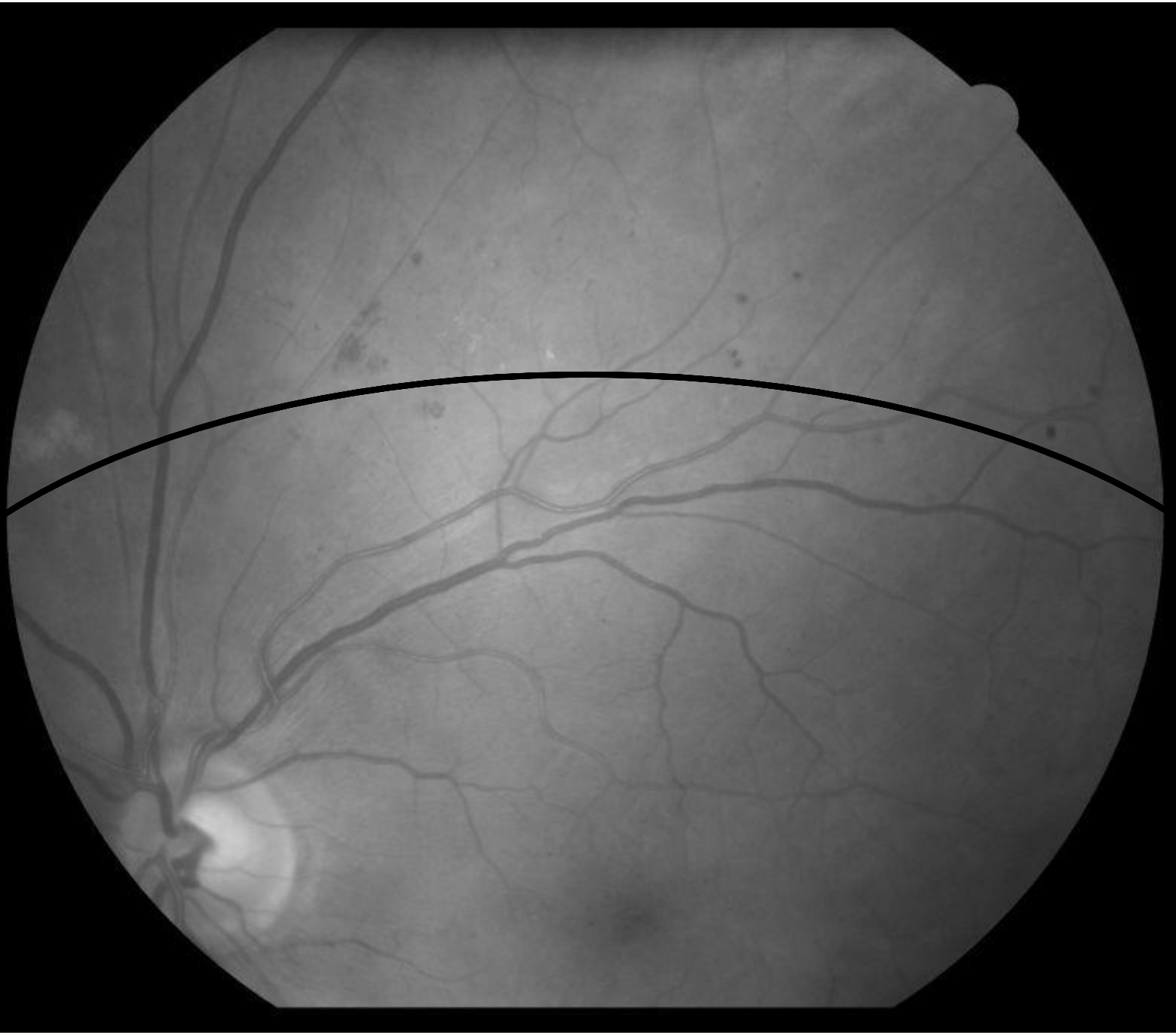
The Red outlined area shows how much can be gained by taking an extra image



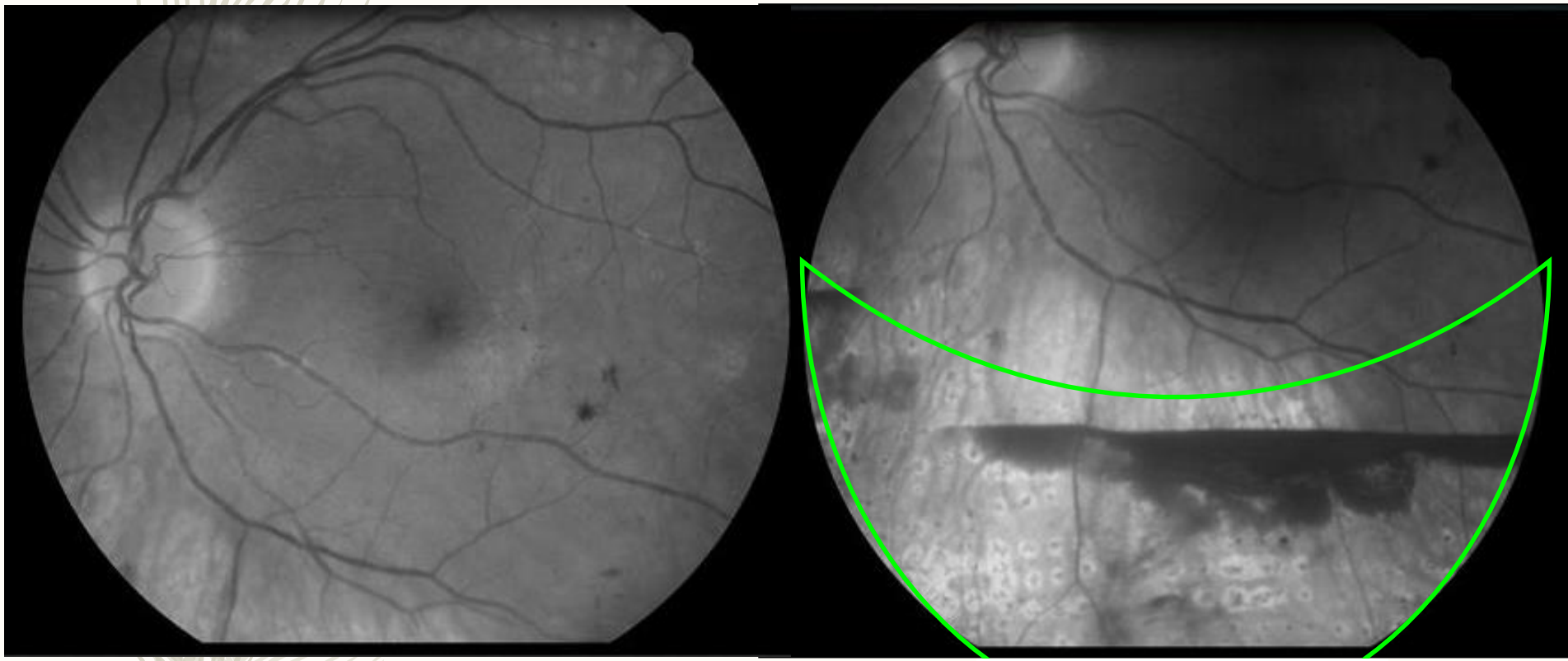
The next slides illustrate just how much disease can be there undiscovered

The images are of patients included in this audit and without the extra images, the New Vessels / R3A would not of been seen or referred

The black line on the images shows were the normal view would stop



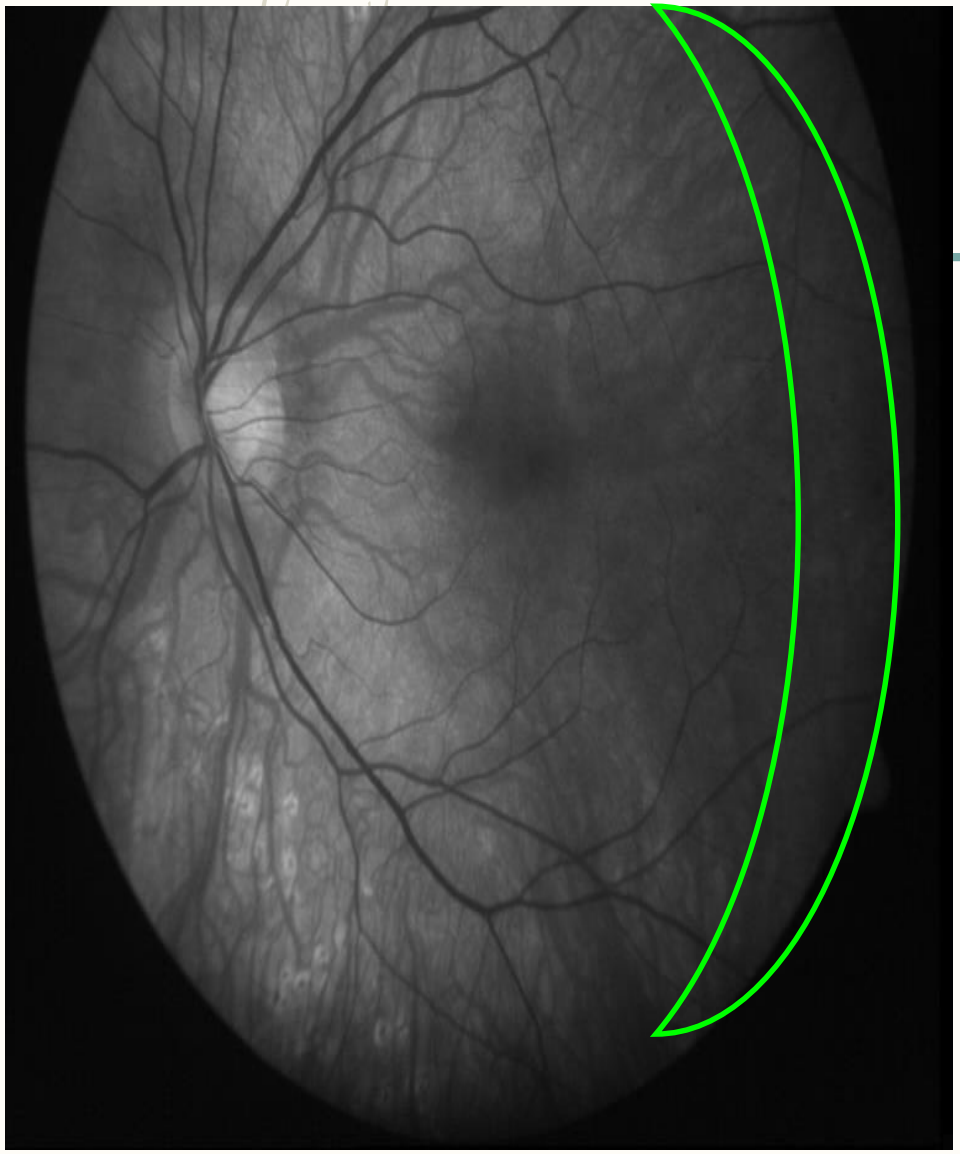
Normal image & extra image
Showing a large Pre Retinal Haemorrhage

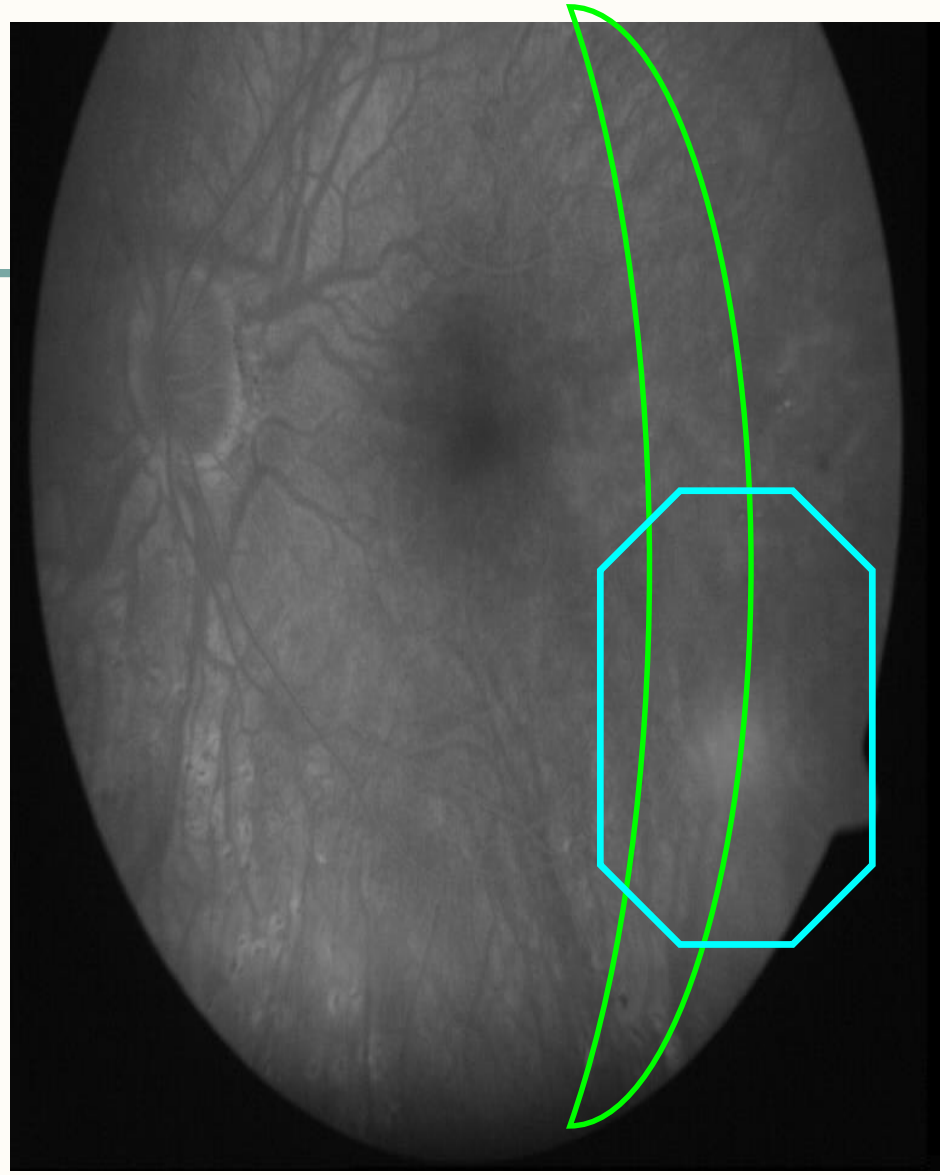


FFA images showing Watershed area and area of leakage

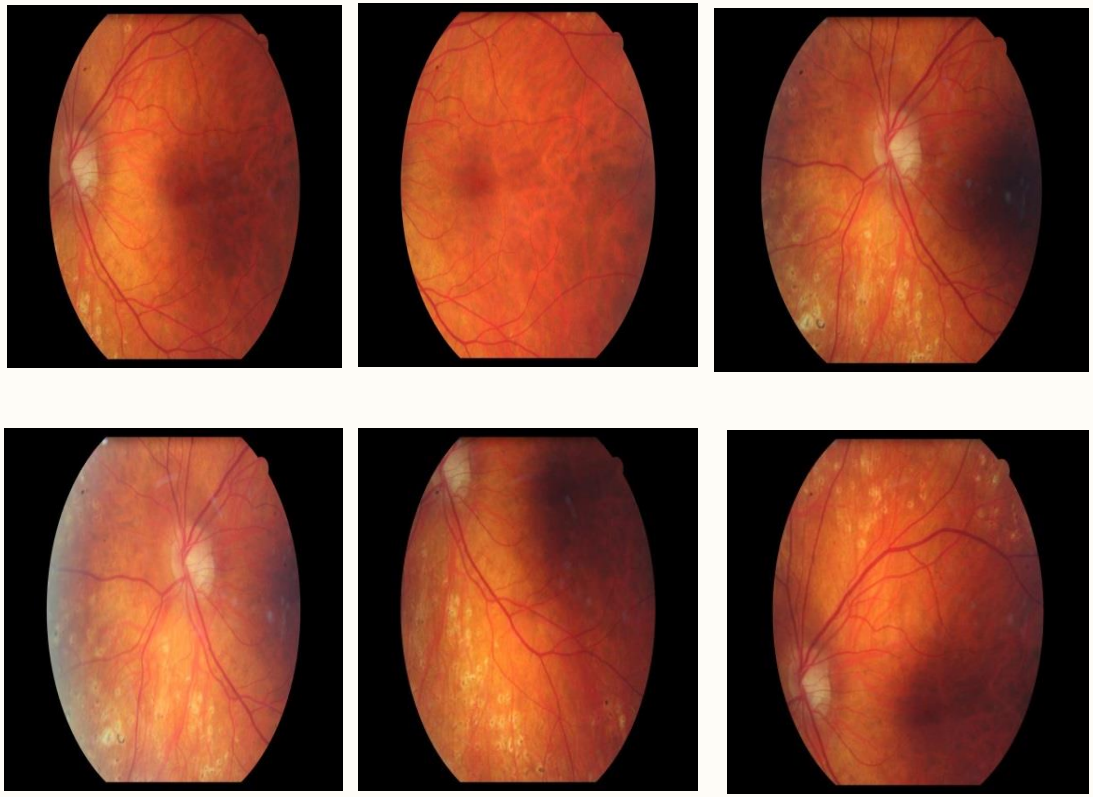
Green line watershed

And blue line area of leakage





We now take 6 images of each eye covering the watershed areas and all 4 quadrants



All patients in this audit were referred from Diabetic retinal screening service between April 2016 – march 2017

We collated this information using 33 patients included in our audit who have been referred to Hospital Eye Service

13 of these patients had laser Treatment

Out of the 13 Patients treated in laser clinic, 9 of the Patients where referred due to the disease seen in extra images

Patient	Standard image graded	Extra images graded	
1	R2	R3A	
2	R3S	R3A	Pre ret haem x2 Seen in example photos
3	R3S	R3A	
4	R3A R2	R3A R2	
5	R3A	R3A	
6	R3S	R3A	
7	R2	R3A	
8	R2	R3A	
9	R3S	R3A	
10	R1	R3A	
11	R2	R3A	
12	R3A	R3A	
13	R3A	R3A	

Confirmed R3A patients - 22

Had laser = 13

Watchful wait ophthalmology = 9

Conclusion

Extra images are of great benefit to the grading process

Patients are referred before any loss of vision can occur

Recommendations

Screeners will carry on taking extra images

We will re audit all information in 12 months