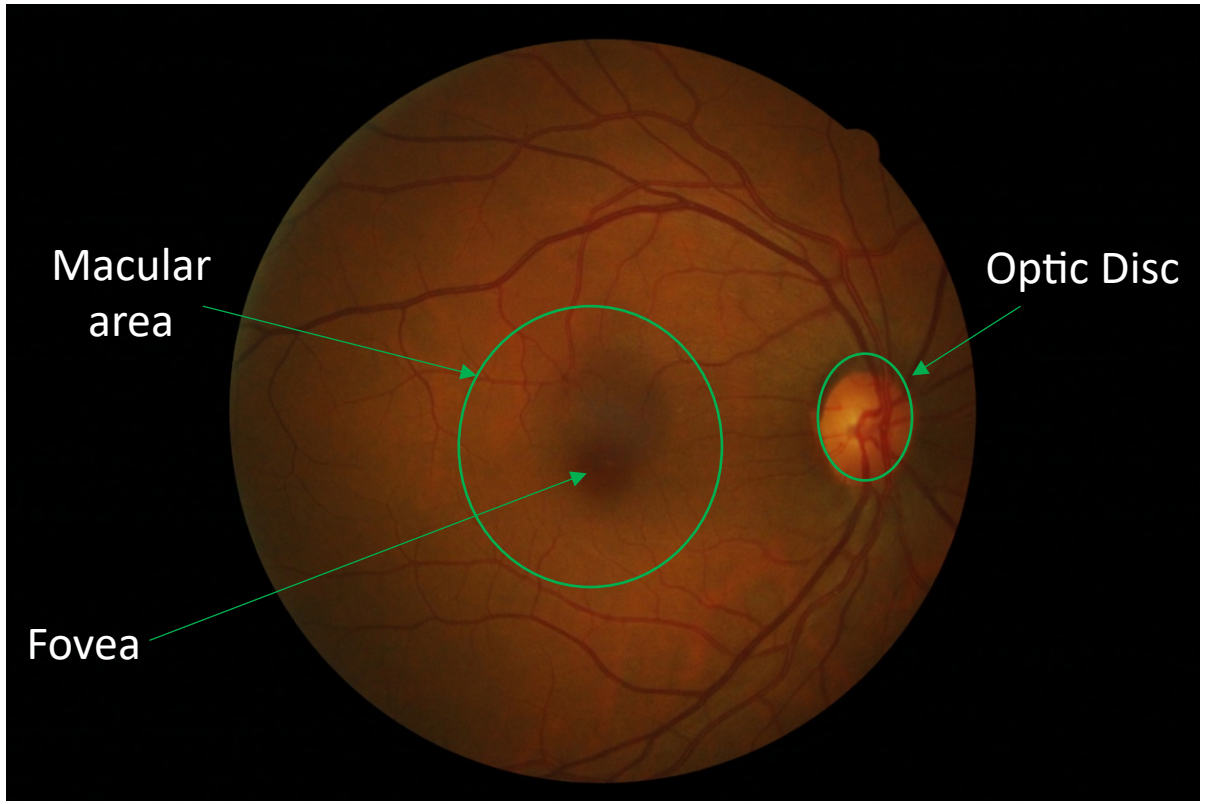
team diabetes 101

Diabetes & Eye Health

Dr Rebecca Thomas
Swansea University Medical School

Word cloud Diabetic Retinopathy

Important features of the retina

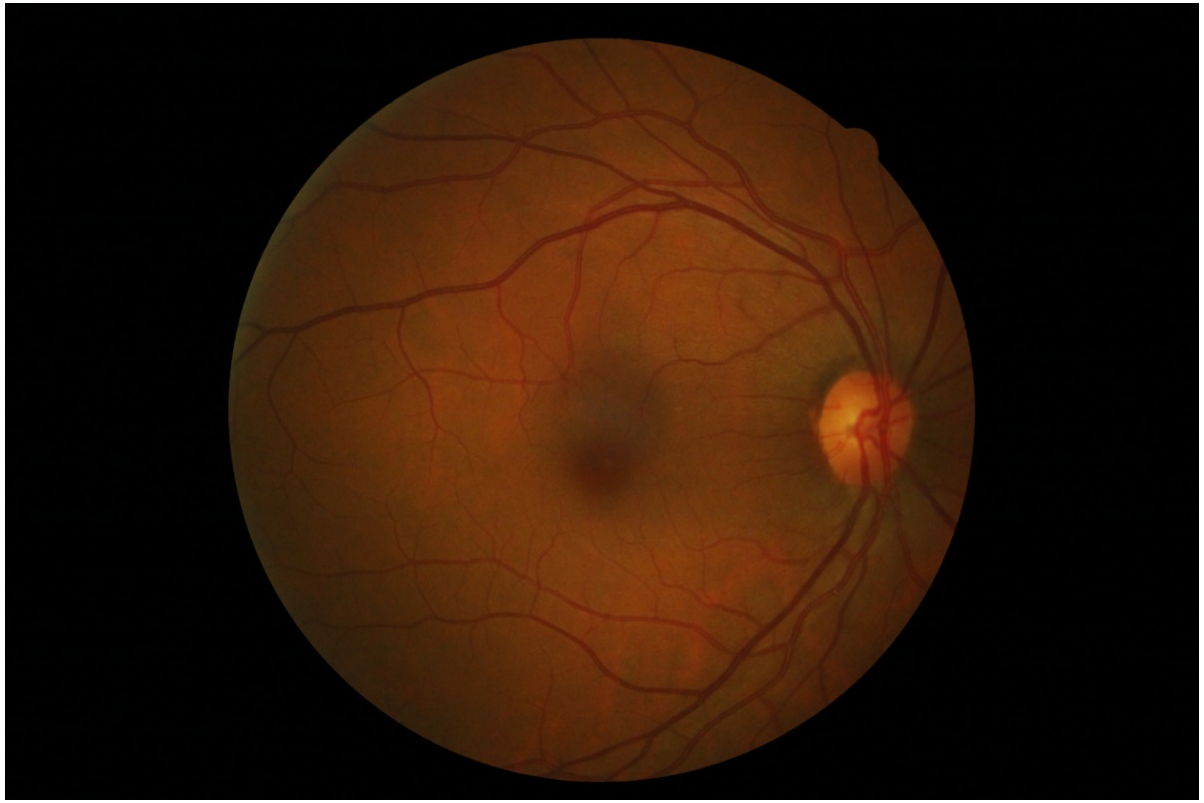


Fovea – responsible for central vision and fine detail for things like reading

Macular area – Lesions appearing within this zone are considered maculopathy

Optic Disc – also known as the blind spot

Macular and nasal images taken as standard in England and Wales as part of the Diabetic Eye Screening programmes



Scotland take a single standard macular centred image per eye

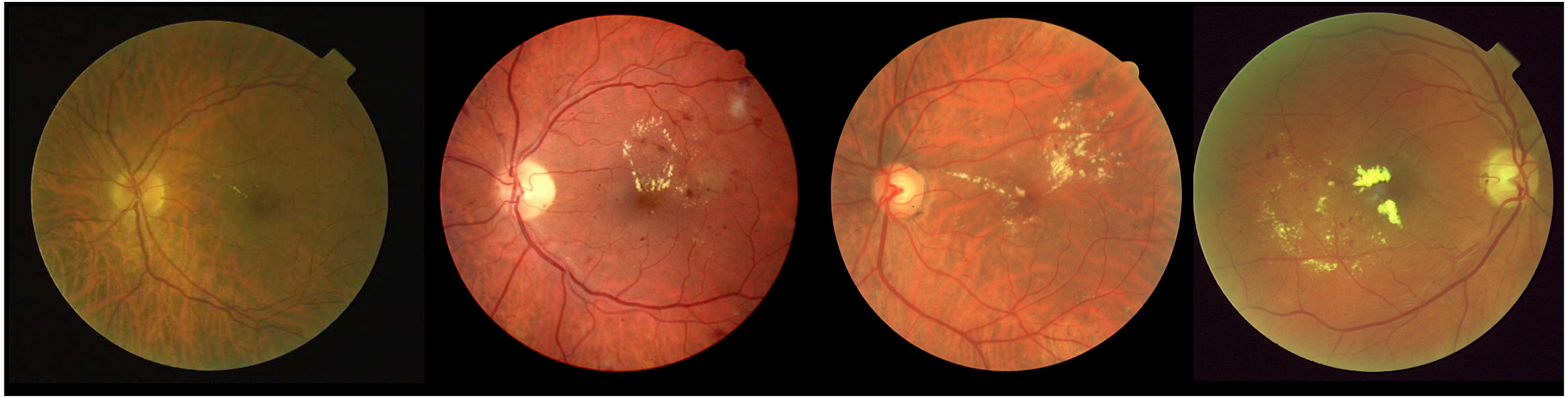
Background Diabetic Retinopathy (R1)

Lesions: Microaneurysms, blot haemorrhages, and exudates (but not within the macular area). Broad category ranging from a single microaneurysm [picture 1] to less than 8 blot haemorrhages and exudates (last 2 images)

Treatment: Optimise glycaemic management, blood pressure and lipid profile.

Management: Rescreen in 12 months

Maculopathy (M1)

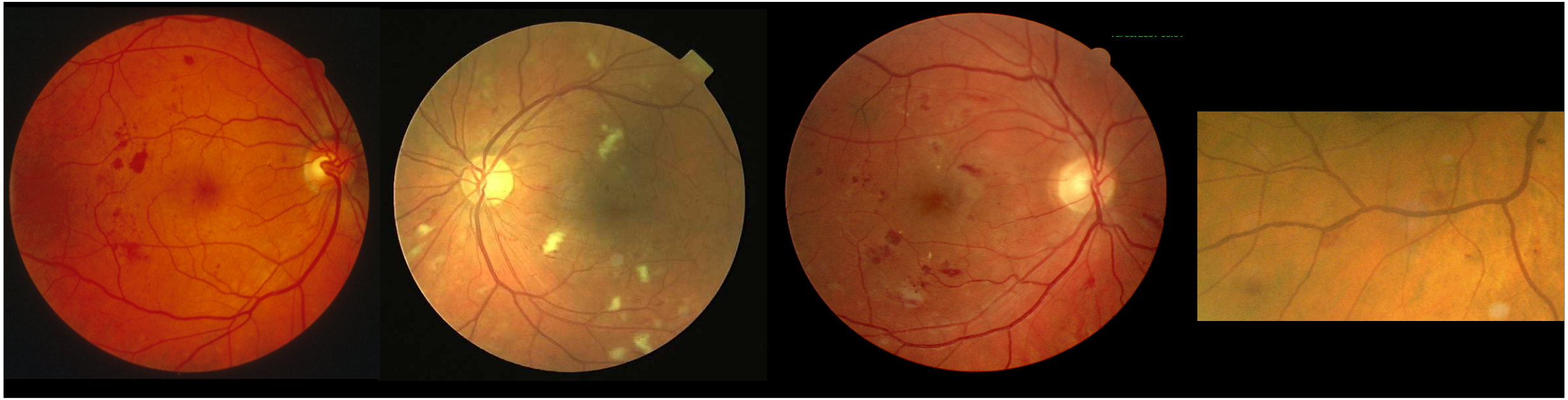


Lesions: Exudates appearing within the macular area or any microaneurysm or haemorrhage within the macular area with an associated best visual acuity of worse than 6/12. Maculopathy can occur at any stage of diabetic retinopathy.

Treatment: Optimise glycaemic management, blood pressure and lipid profile.

Management: Screening surveillance clinics at 3 or 6 month recalls or refer to the hospital eye services for monitoring and treatment if necessary. Treatment options include laser photocoagulation, intravitreal VEGF inhibitors and intravitreal steroid treatment.

Pre-proliferative Diabetic Retinopathy (R2)

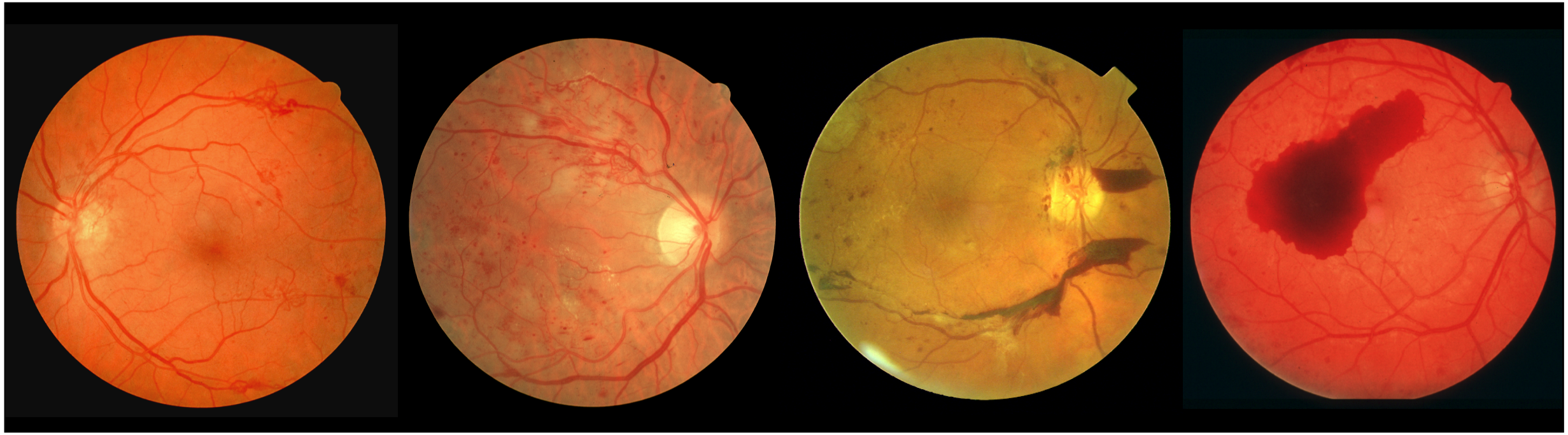


Lesions: Microaneurysms, multiple haemorrhages, cotton wool spots, exudates, venous beading, venous loops and intra-retinal microvascular abnormalities (IRMA).

Treatment: Optimise glycaemic management, blood pressure and lipid profile.

Management: Screening surveillance clinics at 3 or 6 month recalls or refer to hospital eye services for monitoring and possible treatment.

Proliferative Diabetic Retinopathy (R3)

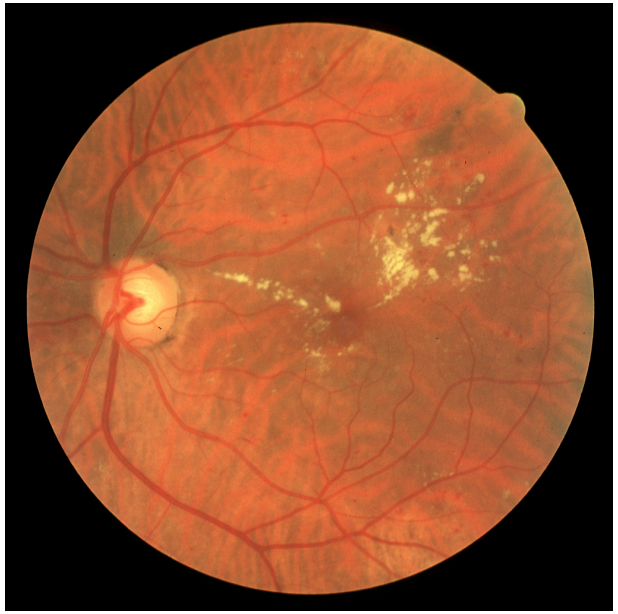


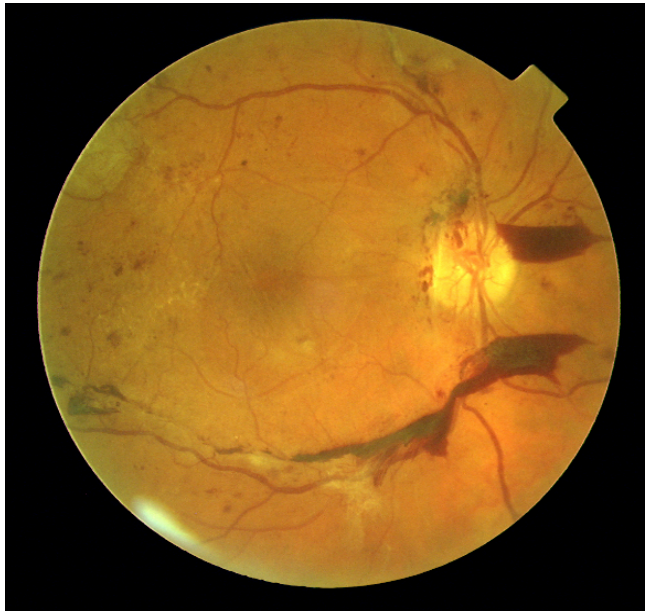
Lesions: New vessels on the optic disc (NVD), new vessels elsewhere (NVE), pre-retinal haemorrhage, vitreous haemorrhage, retinal detachment, fibrosis, rubeosis iridis.

Treatment: Optimise glycaemic management, blood pressure and lipid profile

Management: Refer to hospital eye services for monitoring and possible treatment. Treatment options include laser photocoagulation, intravitreal VEGF inhibitors and vitrectomy

Why screen for diabetic retinopathy





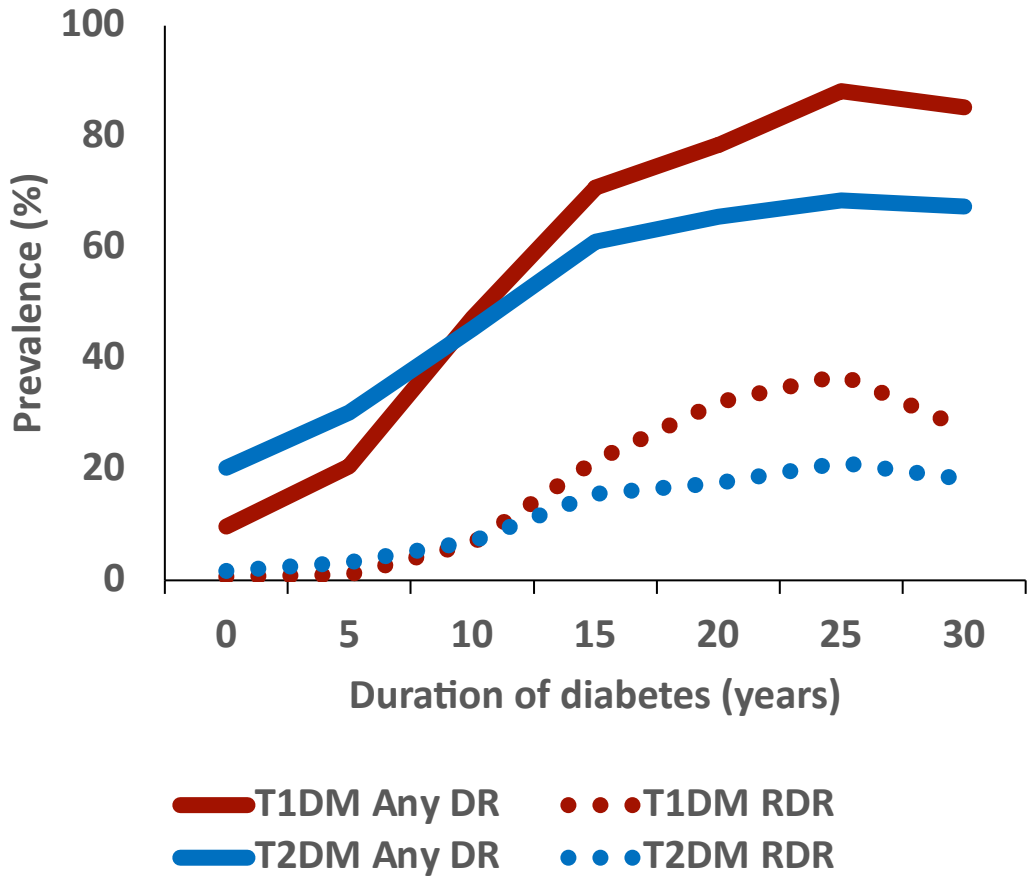
Screening for Diabetic retinopathy aims to detect sight-threating lesions at the earliest stage when treatment is most effective. This stage normally occurs before someone notices changes in their vision. Once vision changes are noticed by someone with diabetes the diabetic retinopathy is still treatable but may require more treatment than if it was detected earlier.

Risk of progression of diabetic retinopathy

No diabetic retinopathy in both eyes (R0 M0)	• Less than 1 in 50 chance of referable eye disease within 3 years
Background diabetic retinopathy in one eye	• Around a 1 in 20 chance of referable eye disease within 3 years
Background diabetic retinopathy in both eyes	• More than 1 in 4 chance of referable eye disease within 3 years

Public Health England, NHS England Diabetic Eye screening programme

Risk of progression of diabetic retinopathy



- After 10 years of diabetes almost 50% of people with have some form of retinopathy with 7% having referable retinopathy
- After 25 years of type 1 diabetes almost 90% will have some form of retinopathy with almost 30% having referable retinopathy.
- After 25 years of type 2 diabetes almost 70% will have some form of retinopathy with 20% having referable retinopathy.

Risk factors for diabetic retinopathy

Things you can change

- High blood glucose
- High blood pressure
- High cholesterol

Thing you can’t change

- Duration of diabetes
- Ethnicity
- Pregnancy
- Age
- Puberty
- Genetic makeup

Key points

The best thing you can do to prevent diabetic retinopathy from developing or progressing is to manage you blood glucose as best you can.

Once diabetic retinopathy develops it can regress especially if you make changes to your blood glucose and blood pressure.

If diabetic retinopathy develops, try not to make changes too quickly as large decreases in HbA1c levels is a risk for the progression of diabetic retinopathy

Genetics plays a role too some people with low HbA_{1c} levels will still develop diabetic retinopathy and some with high HbA_{1c} levels will never develop diabetic retinopathy.

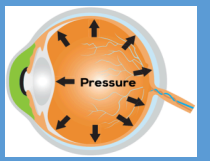
Other eye conditions

- There are some eye conditions which are not caused by diabetes but are more prevalent, and in some cases can deteriorate faster in people with diabetes.
- Therefore, in addition to attending Diabetic eye screening people with diabetes should also attend their opticians regularly.

Refractive error

Diplopia (double vision)

Cataract



Glaucoma

International diabetes federation and the Fred Hollows Foundation. Diabetes eye health: A guide for health care professionals 2015

Other eye conditions

- Refractive error

- Variations in blood glucose levels may cause changes in the refractive power of the eye

International diabetes federation and the Fred Hollows Foundation. Diabetes eye health: A guide for health care professionals 2015

Other eye conditions

- Diplopia (double vision)

- Diplopia is the the perception of two images of a single object at the same time.
- Diplopia is caused by damage to the nerves that control the eye
- Diabetes is the leading cause of nerve damage that disrupts normal eye movement

International diabetes federation and the Fred Hollows Foundation. Diabetes eye health: A guide for health care professionals 2015

Other eye conditions

- Cataract

- Cataracts are clouding of the lens that affects vision and can appear in one or both eyes.
- Snowflake cataracts with white opacities may affect people with Type 1 diabetes
- Age related cataracts tend to occur earlier in people with diabetes compared to those without.

International diabetes federation and the Fred Hollows Foundation. Diabetes eye health: A guide for health care professionals 2015

Other eye conditions

- Glaucoma

- Glaucoma is a group of progressive conditions that result in damage to the optic nerve (disc).
- Glaucoma can permanently damage vision in the affected eye, reducing peripheral vision.

International diabetes federation and the Fred Hollows Foundation. Diabetes eye health: A guide for health care professionals 2015

Take home messages

- Sight loss/blindness due to diabetes is not inevitable
- If diabetic retinopathy develops it can regress especially if you make changes to your blood glucose and blood pressure.
- If diabetic retinopathy progresses there is treatment available and the earlier this is picked up the better the visual outcomes
- Genetics plays a role too some people with low HbA_{1c} levels will still develop diabetic retinopathy and some with high HbA_{1c} levels will never develop diabetic retinopathy.
- Its not your fault or a punishment you are all trying your best to manage a 24/7 condition. Attend screening, and talk to your diabetes multidisciplinary team for advice.