Introduction

Diabetes arises either because of the complete lack of insulin (Type I or Insulin Dependant Diabetes) or diminished effect of the insulin within the body tissues (Type II or Non Insulin Dependant Diabetes). The overriding effect of insulin is to allow cells within tissues and organs to take up blood glucose. Once inside the cell the glucose is used as the energy source for cell activities or converted into storage tissue. Without insulin, there may be abundant glucose in the blood but the cells of the body will not be able to utilise it as an energy source.

Diabetes affects the entire body, but there can be specific alterations within the eye (Diabetic Retinopathy). Diabetics need regular eye checks to monitor for diabetic retinopathy. The changes which can occur within the eye are due to two basic processes. Firstly, the blood vessels themselves can become leaky, allowing blood and plasma to escape into the retinal tissue. Secondly, the blood vessels within the eye can become blocked, allowing less oxygen to reach the retinal layers.

Risk Factors for Diabetic Retinopathy

Diabetic retinopathy does not occur immediately on becoming diabetic. The changes may not become apparent for many years. Some of the risk factors for diabetic retinopathy are:-

Duration of Diabetes

It is extremely rare for diabetic retinopthy to develop within 5 years of the onset of diabetes but conversely the longer a patient is diabetic the more likely they are to show signs of retinopathy.

Diabetic Control

Excellent control of diabetes does not prevent diabetic retinopthy developing, however it will certainly delay the onset of complications.

Hypertension

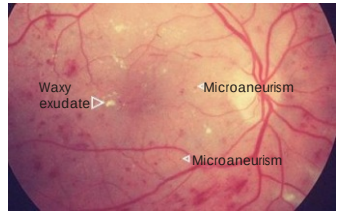
Poor control of high blood pressure can accelerate diabetic changes.

Renal Disease, Obesity, High Cholesterol, Smoking, Pregnancy and Anaemia

are all implicated in inducing diabetic changes.

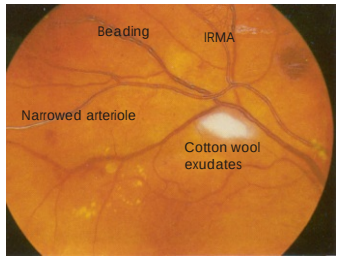
So what are the phases of diabetic retinopathy and when do we act ?

Simple Background Retinopathy



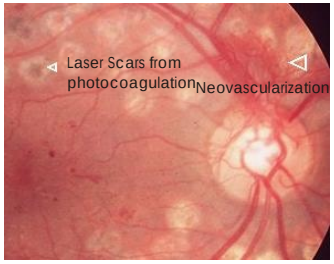
The earliest detectable changes are small dot haemorrhages and waxy deposits. Termed background retinopathy, treatment is not required as these changes come and go.

Pre-Proliferative Retinopathy



All the clinical signs evident in these more advanced cases are due to lack of oxygen (ischaemia) for the retinal tissues. More severe signs of retinal damage will be the result of oxygen starvation. Retinal veins can become distorted while arteries narrow and constrict. The lack of oxygen affects the retinal nerves, which carry the light impulses of sight to the brain. Usually no treatment is recommended, unless regular follow up is impossible or the patient has lost sight in the other eye, but more regular checks would be essential.

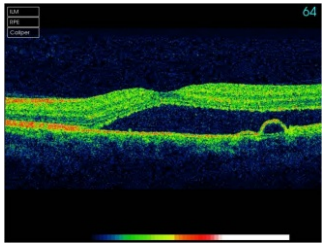
Proliferative Retinopathy



Severe lack of oxygen stimulates the growth of new blood vessels as the body attempts to get oxygen to the area. Unfortunately these new vessels are very delicate and will leak and bleed. Bleeds from these vessels can cause severe loss of vision. Patients with proliferative diabetic retinopathy require relatively urgent treatment. Lasers seal the leaky vessels and reduce the oxygen demand.

Monitoring

Monitoring is done via the Diabetic Retinal Photography Scheme. As of 2013 the service involves a mobile camera unit at the local GP. Aarons has graders nationally accredited but unfortunately the service has contracted to a southern company.



Ocular Coherence Tomography (OCT) is a relatively new technology which is not currently part of the routine screening service. This machine, akin to an ultrasound, sees into the retina, rather than just the surface as with photography and can identify subtle signs of fluid build up beneath the surface.