

DIABETIC RETINOPATHY



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Diabetes



- ▣ Diabetes is a disease that can affect the bodies natural ability to utilize and maintain proper glucose levels. Uncontrolled glucose can cause multiple systemic and health problems.

- ▣ The **EXCESS** of blood glucose levels will cause damage to the entire body, especially in the eyes. With time, uncontrolled diabetes affects the circulatory system of the retina.

Diabetes



- ▣ There is an estimated 16 million of North Americans with diabetes, with a probability of 50% unaware they have it.
- ▣ Patients that have diabetes, only 50% of them receive treatment needed for their eyes.
- ▣ Diabetic Retinopathy is the number one cause of blindness in persons 25-74 years of age in the United States.

Diabetes

- ▣ Diabetes is responsible for blindness in over 8000 people every year.
- ▣ The risk is much higher in ethnic groups.
- ▣ Diabetic Retinopathy exists more in patients of Hispanic, Native American, and African American decent.

Risk Factors:

- ▣ High risk ethnic groups
- ▣ First degree relatives
- ▣ Physical inactivity
- ▣ Gestational diabetes
- ▣ HTN
- ▣ Low HDL less than 35
- ▣ High TG > 250
- ▣ Impaired fasting glucose/ IGT
- ▣ Vascular disease
- ▣ PCO
- ▣ Acanthosis nigricans

Diabetes

Doctor, why me?



What is Diabetic Eye Disease?

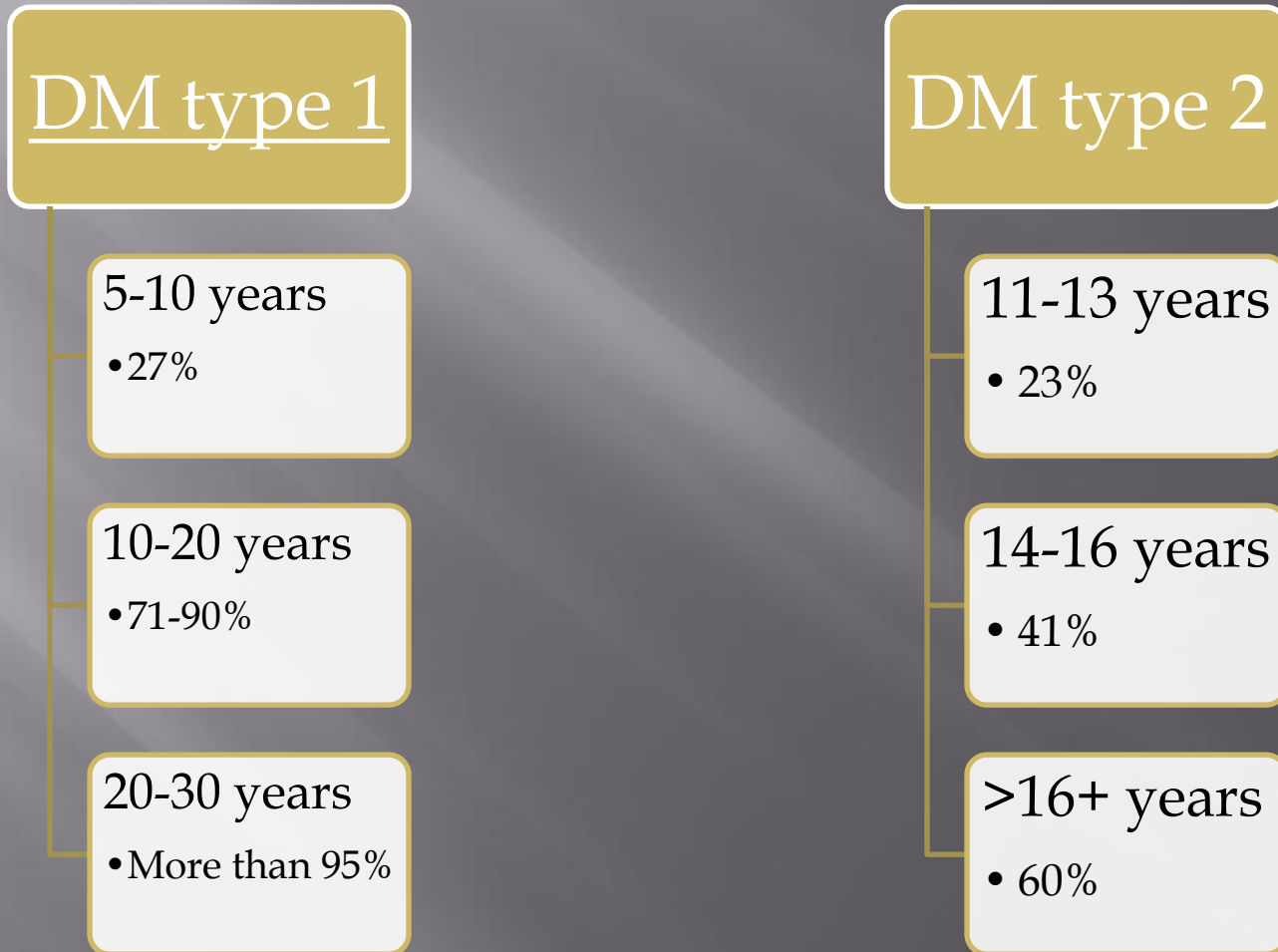
- ▣ Diabetic Retinopathy is a condition that presents itself in persons with longstanding and uncontrolled Diabetes
- ▣ The cause is progressive damage to the retina, which is the light sensing part of the eye located as the lining of the inner eye.

Time with Diabetes

- ▣ With more time a patient has suffered from Diabetes, the higher probability that Diabetic Retinopathy will develop.

If left untreated, diabetic retinopathy will slowly cause vision impairment and blindness

Timeframe in development of diabetic eye disease



What are diabetic related diseases

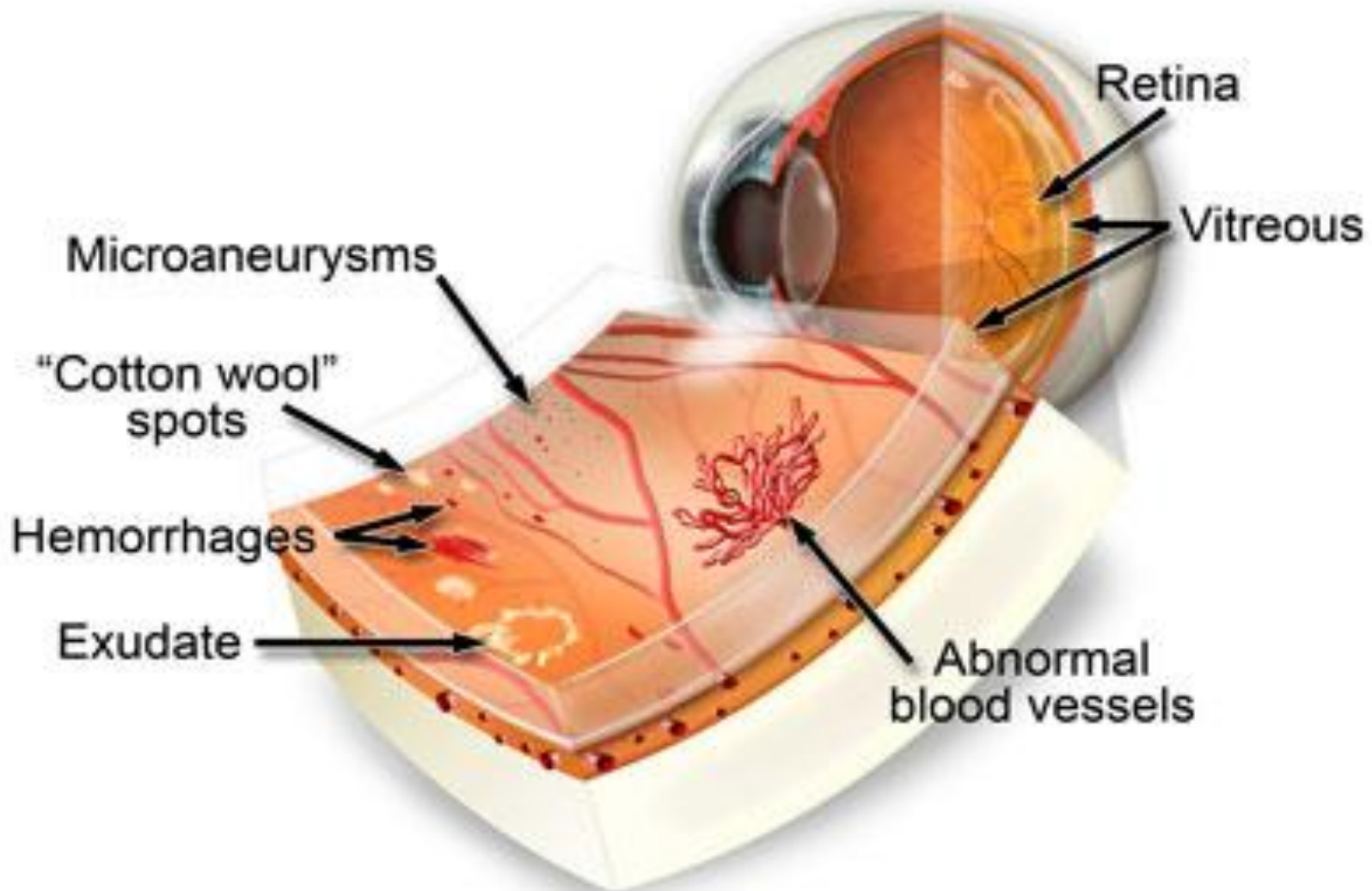
- ❑ Diabetic Retinopathy – damage to the small blood vessels in the retina
- ❑ Cataracts – The crystalline lens inside the eye starts to become cloudy affecting vision
 - Cataracts is an age related process that occurs to everyone but there are some factors like uncontrolled diabetes that will advance this condition much sooner in life
- ❑ Glaucoma – occurs when the optic nerve damage causes progressive peripheral vision loss.
 - Increased intraocular pressure
 - Diabetes 2x more likely to develop in adults

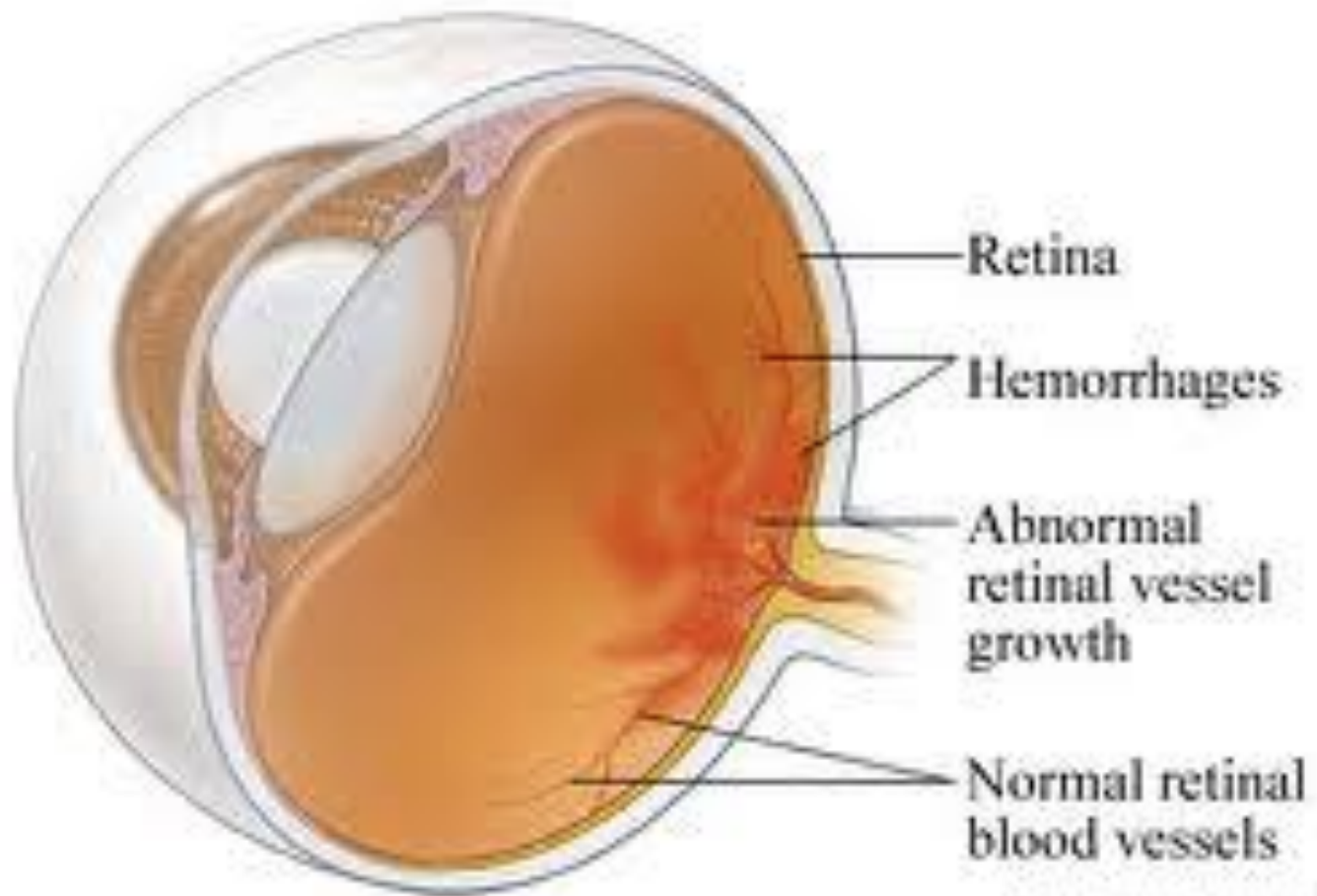


What is diabetic retinopathy?

- ❑ Diabetic Retinopathy results from damaged small blood vessels in the retina
- ❑ The damage to these tiny retinal blood vessels happens when increase blood glucose levels make their walls weak.
- ❑ When these blood vessels come weak the will start to leak causing retina to suffocate
- ❑ As the retina has difficulty breathing, it will start to develop new vessels (neovascularization) to help it from become ischemic.
- ❑ Generally, the disease process will develop to both eyes

Diabetic Retinopathy





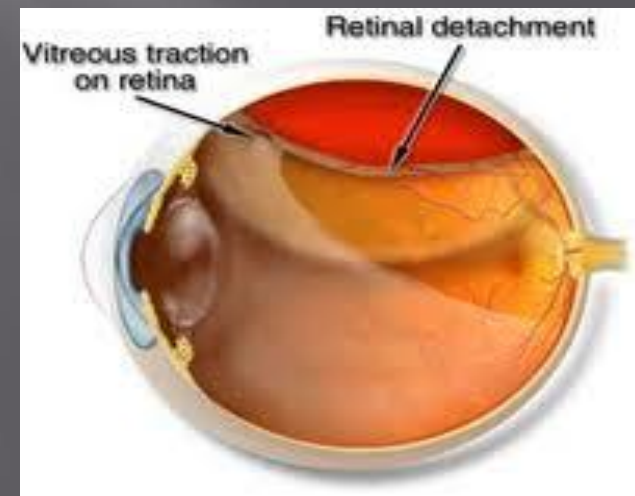
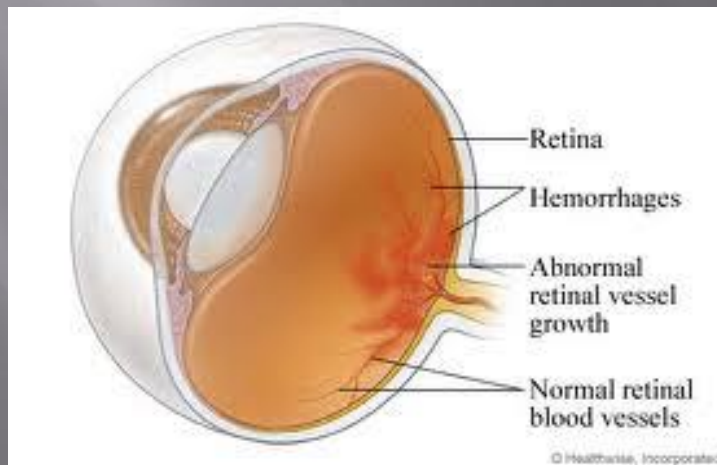
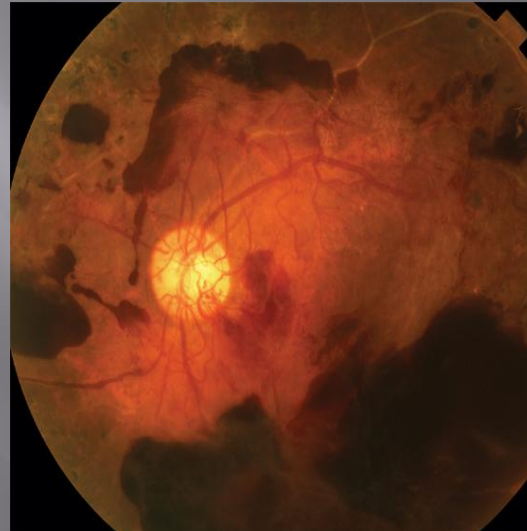
Retina

Hemorrhages

Abnormal
retinal vessel
growth

Normal retinal
blood vessels

What is diabetic retinopathy?



What is diabetic retinopathy?



**Retina
Normal**



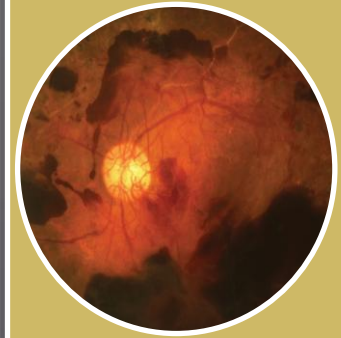
**Mild
Retinopathy**



**Moderate
Retinopathy**



**Severe
Retinopathy**



**Proliferative
Retinopathy**



Who has the risk of developing this disease?

- ▣ ALL Patients with Diabetes.

Both type 1 and type 2 have equal risk

- ▣ This is why diabetic patients need to have a comprehensive dilated eye exam at least once a year

More Who has the risk of developing this disease?

- ▣ About 40 – 45% of northamericans diagnosed with diabetes have some level of retinopathy
- ▣ Futhermore, females that are pregnant can develop this condition. Fluctating hormones and blood glucose levels can make this process appear during burthing and beyond. All pregnant diabetic patients must have a dilated eye exam before and after labor.
- ▣ If a patient has retinopathy, your eye physician can recomned treatment to prevent further progression of the disease process

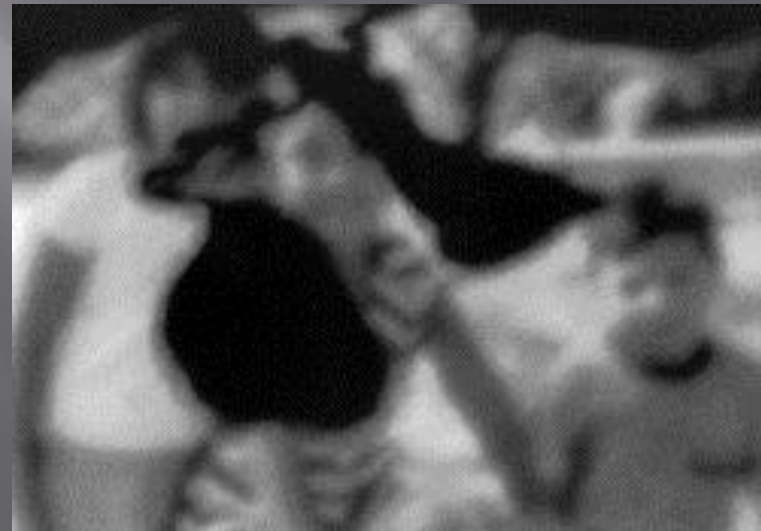
Manuel Uribe The fattest man alive!



How does diabetic retinopathy affect vision?



Normal Vision



Person with Diabetic Retinopathy

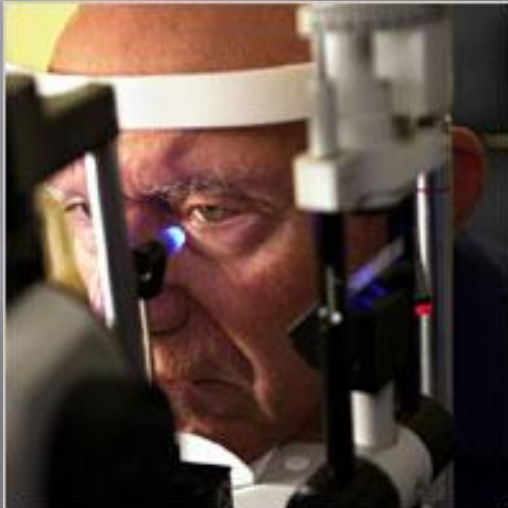
Symptoms

Some signs of diabetic retinopathy:

1. Some experience flashes and floaters in the peripheral vision
2. Blurry or distorted vision
3. Blind spot in your central vision
4. Difficulty with night time driving
5. NONE!

How do you diagnose diabetic retinopathy?

A complete eye exam!



How is diabetic retinopathy diagnosed?

➤ Patient History:

- Important to know what patient is experiencing, how controlled is DM, compliance with medicine, and general health

➤ Visual Acuity:

- Determines quality of vision and usable vision (i.e. 20/20)

➤ Refraction:

- Determines the changes in vision or need for eyeglasses. Patients with uncontrolled DM will have sudden onset of blurry vision and think its the eyeglasses that need to be changed

➤ Intraocular pressure

- Some patients will have increased eye pressure when DM is advanced giving rise to Glaucoma

➤ Pupil Dilation:

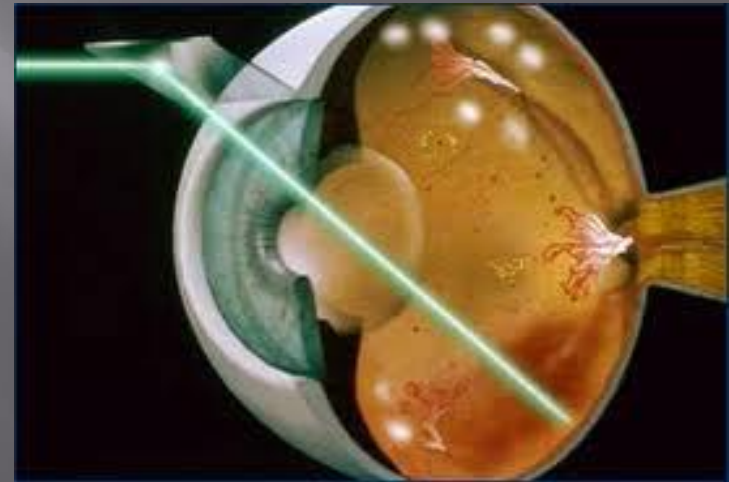
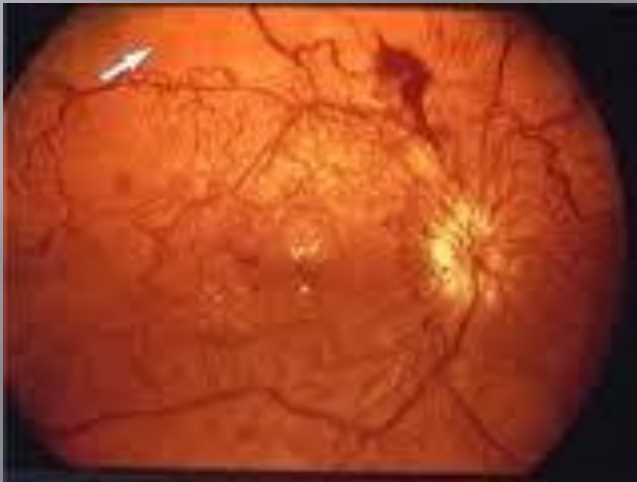
- Evaluation of the internal ocular structures including the optic nerve, retina, and vessels

How is Diabetic Retinopathy treated?

- ▣ To prevent further advancement of the disease, strict blood glucose control is most important
- ▣ Other measures that the patient can do is control Cholesterol and Hypertension
- ▣ When these measures fail to due poor compliance or advanced disease, the first step we consider is retinal laser

How is Diabetic Retinopathy treated?

- ▣ Proliferative DM Retinopathy can be treated with laser

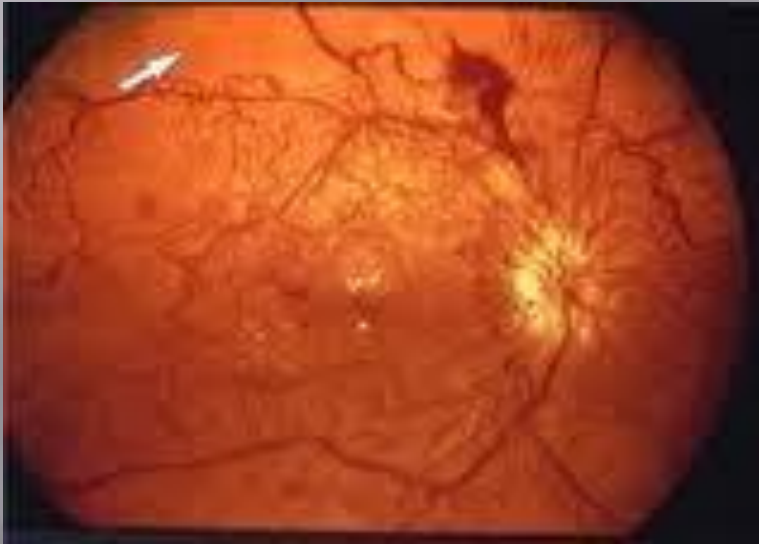


This treatment is very effective in regressing new blood vessels by burning them

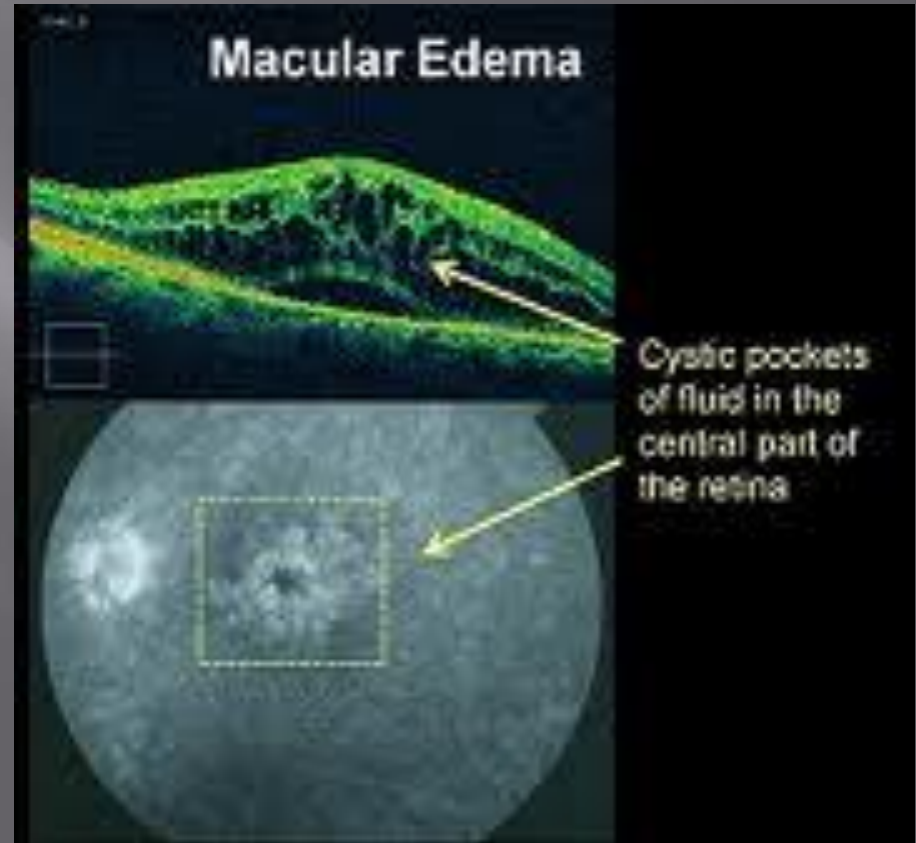
**However, this procedure causes the treated areas of the retina to lose vision
Therefore decreasing vision, color, perception, night vision problems**

How is Diabetic Retinopathy treated?

Pan-retinal Photocoagulation (PRP)



How is Diabetic Retinopathy treated?

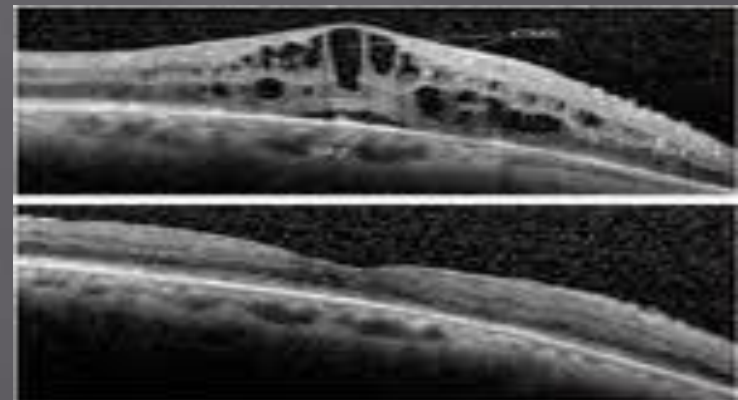


How is Diabetic Retinopathy treated?

Diabetic Macular Edema

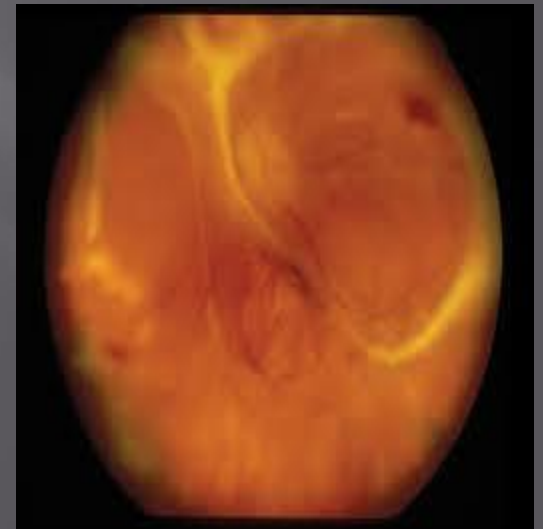


Intravitreal Anti-VEGF



How is Diabetic Retinopathy treated?

- ❑ In more advanced retinopathy, blood will leak into the jelly of the eye (Vitreous) causing a retinal detachment and complete vision loss.
- ❑ If this is detected in time, a Retina Specialist will perform a Vitrectomy to remove vitreous and attempt to re-attach retina



How is Diabetic Retinopathy treated?

- After laser and surgical procedures, the patient must further control they Diabetes to avoid more retinal damage!

- NO
- NO
- NO
- NO
- NO
- NO



What can you do to protect your eyes from disease?

1. All diabetic must have annual dilated eye exam
1. If blood glucose levels are controlled, the incidence and progression of diabetic eye disease may be reduced. Daily monitoring is helpful
2. HTN and Cholesterol control plays a huge role in the advancement of retinopathy. Blood pressure checks are advised
1. If disease is present LISTEN to eye physician and obey orders to lessen risk of blindness

What can you do to protect your eyes from disease?



What can you do to protect your eyes from disease?

- ▣ Maintain glucose as close to normal range as possible 70 – 130mg/dl or A1C <7%
- ▣ Follow Internist, Endocrinologist, and Nephrologist orders
- ▣ You can have diabetic eye disease and still see 20/20!

Remember that all Diabetics have risk of going blind or becoming visually impaired

Questions?

