

Speaker Disclosure Statement



☞ Dr. Tim Maillet and Dr. Vladimir Kozousek have no conflicts of interest to disclose.

Diabetic Eye Care in Nova Scotia



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Diabetes Morbidity



- ❧ Diabetes doubles the risk of stroke.
- ❧ Diabetes quadruples the risk of heart disease.
- ❧ Diabetes is the leading cause of non-traumatic lower extremity amputations.
- ❧ Diabetes causes 33% of the new cases of end-stage renal disease.
- ❧ **Diabetes is the leading cause of blindness in adults aged 25-75.**

Nova Scotia Diabetes Statistics Report 2008

- ⌘ Approximately 8.7% (1 in 11), or 67,000 adults, are living with a diagnosis of diabetes.
- ⌘ Prevalence has increased by 20% over the past five years.
- ⌘ The prevalence increases with increasing age, and as a result 1 in 5 adults over the age of 70 have diabetes.
- ⌘ Over 5,800 new cases of diabetes are diagnosed each year (~500 new cases per month).
- ⌘ The crude prevalence rate varies across District Health Authorities from 7.2% to 10.8%, with the highest rates in Cape Breton, South West, and South Shore.

Nova Scotia Diabetes Statistics Report 2008

- ❧ Adults with diabetes, as compared to those without diabetes, are:
 - ❧ 3 times more likely to have cardiovascular disease
 - ❧ 6-7 times more likely to have kidney disease and eye disease (retinopathy)
 - ❧ 11 times more likely to have a lower extremity amputation
- ❧ In the 20-49 years age group, people are 25-35 times more likely to have nephropathy & retinopathy.

Nova Scotia Diabetes Statistics Report 2008 - Retinopathy



- ❧ The ratio of standardized retinopathy rates revealed a 3.9 to 9.7 times increase in the risk of retinopathy among the population with diabetes.
- ❧ Crude retinopathy rates by age group & sex revealed that those with diabetes were more likely than those without diabetes.
- ❧ The ratio of retinopathy rates was much greater for the younger age group (20-64) than the older age group.
- ❧ People with diabetes were on average 7 times more likely to suffer from retinopathy.

Eye Care Team



❧ Ophthalmologist:

❧ Medical doctor who specializes in medical & surgical eye problems.

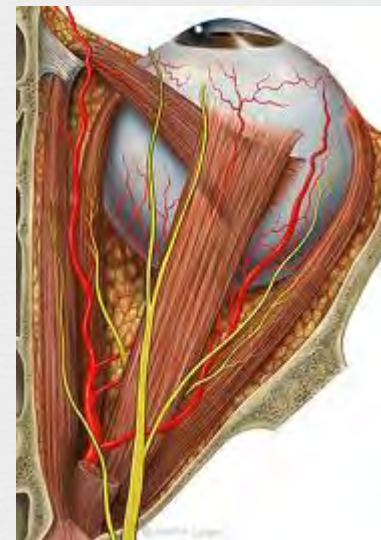
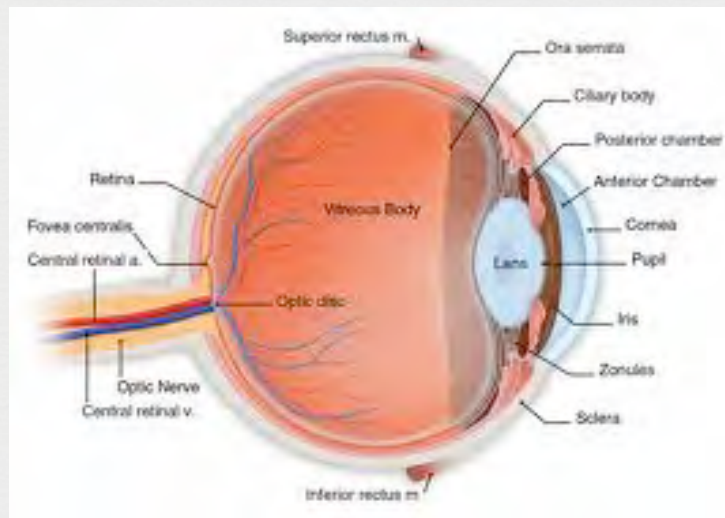
❧ Optometrist:

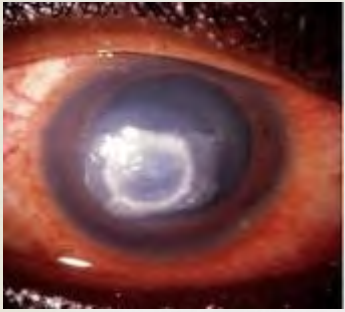
❧ Optometry doctor who provides primary vision care ranging from sight correction to the diagnosis, treatment, and management of eye disease.

❧ Optician:

❧ Someone who makes and dispenses eyeglasses & other eye correction. Prescriptions are provided by optometrists & ophthalmologists.

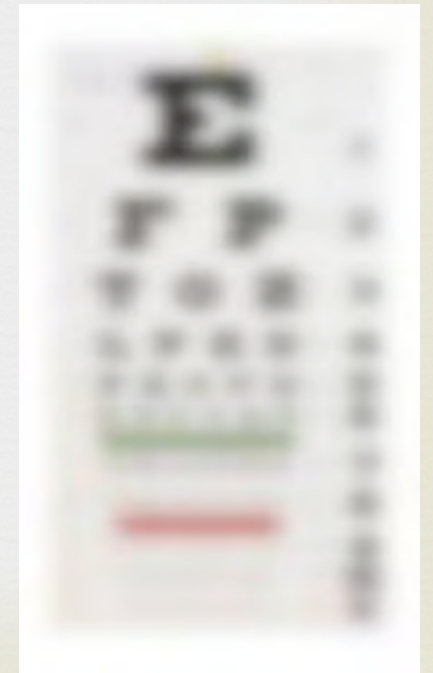
Ocular Anatomy





Ocular Effects of Diabetes

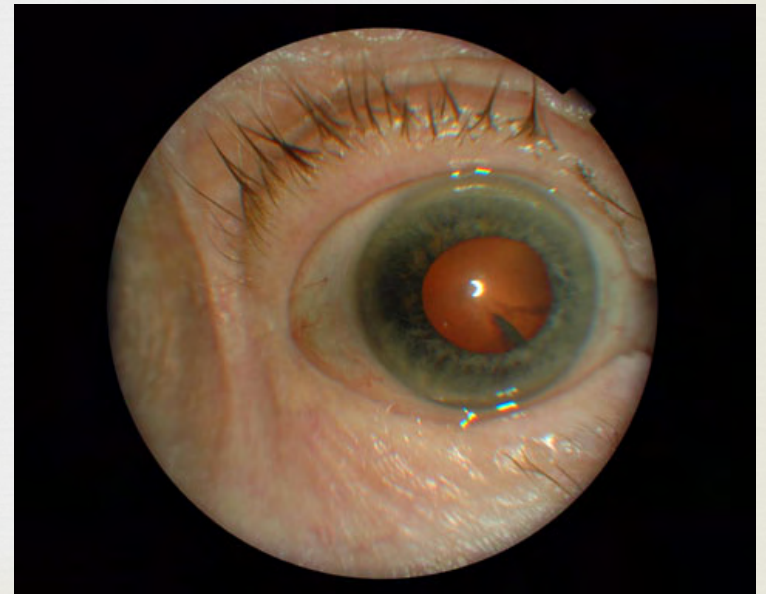
- ❧ Cornea: hypoesthesia, delayed healing, thickness changes.
- ❧ Aqueous: glucose concentration, refractive index changes.
- ❧ Diabetes can cause large shifts in nearsightedness and farsightedness as blood sugar levels fluctuate.



Diabetic Lens Changes



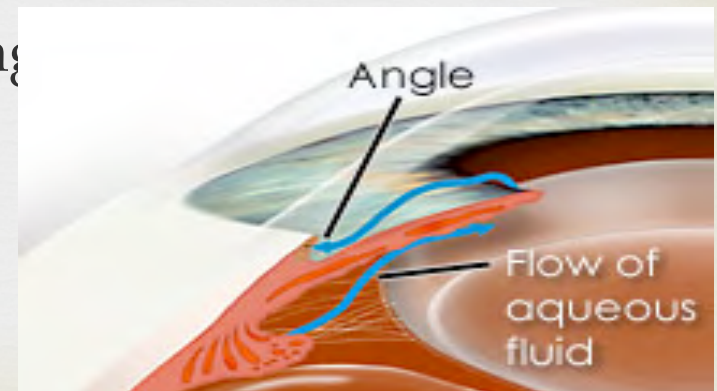
- ❧ Transient refractive changes are highly dependant on the magnitude of plasma glucose concentrations.
- ❧ Correction of hyperglycemia is correlated with recovery of ocular refraction.
- ❧ Diabetes can lead to premature cataract development.



Diabetic Iris Changes



- ❧ Ischemia (localized deficiency in blood supply) is thought to initiate iris neovascularization.
- ❧ New blood vessel growth at the pupillary border, iris surface, and iris angle leads to formation of fibrovascular membranes.
- ❧ Membranes in the anterior chamber angle block aqueous outflow, leading to increased intraocular pressure, and greatly increases the risk of glaucoma.



Ocular Effects of Diabetes

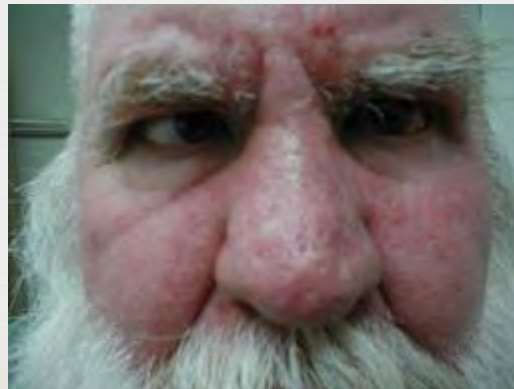
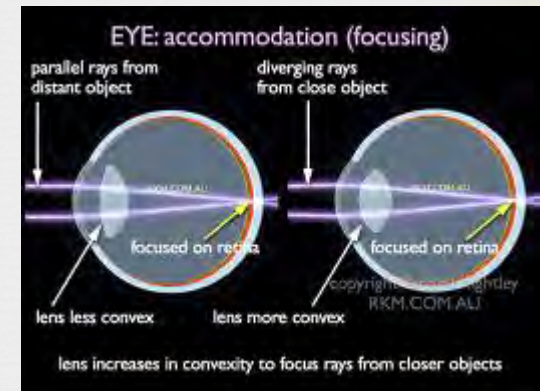
☞ Intraocular muscles:

☞ Paresis, accommodative dysfunction

☞ Extraocular muscles:

☞ Paresis, sudden onset diplopia (double vision)

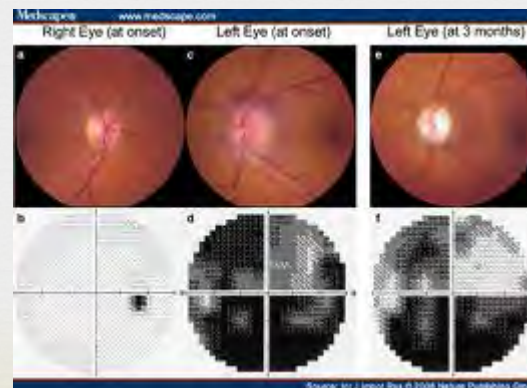
☞ Palsy with diplopia caused by 3rd, 4th or 6th cranial nerve involvement.



Ocular Effects of Diabetes

Nonarteritic ischemic optic neuropathy:

- Symptoms: sudden, painless, nonprogressive visual loss of moderate degree, initially unilateral, but may become bilateral.
- Signs: pale optic disc swelling (often segmental), flame-shaped hemorrhages, reduced colour vision, visual field defect, optic atrophy after edema resolves.



Canadian Diabetes Association 2008 Clinical Practice Guidelines



❧ Retinopathy key messages:

- ❧ Screening is important for the detection of treatable disease. Screening intervals for diabetic retinopathy vary according to the individual's age and type of diabetes.
- ❧ Tight glycemic control reduces the onset and progression of sight-threatening diabetic retinopathy.
- ❧ Laser therapy reduces the risk of significant visual loss.

Canadian Diabetes Association 2008 Clinical Practice Guidelines - Recommendations



- ❧ 1. In individuals 15 years old or older with type 1 diabetes, screening and evaluation for retinopathy by an expert professional should be performed annually starting 5 years after the onset of diabetes.

- ❧ 2. In individuals with type 2 diabetes, screening and evaluation by an expert professional should be performed at the time of diagnosis of diabetes. The interval for follow-up assessments should be tailored to the severity of the retinopathy. In those with no or minimal retinopathy, the recommended interval is 1-2 years.

Canadian Diabetes Association 2008 Clinical Practice Guidelines - **Recommendations**



- ❧ 3. Screening for diabetic retinopathy should be performed by experienced professionals, either in person or through interpretation of retinal photographs taken through dilated pupils.

- ❧ 4. To prevent the onset and to delay the progression of diabetic retinopathy, people with diabetes should be treated to achieve optimal control of blood glucose. People with abnormal lipids should be considered at high risk for retinopathy.

Canadian Diabetes Association 2008 Clinical Practice Guidelines - Recommendations



- ❧ 5. Patients with sight threatening diabetic retinopathy should be assessed by a general ophthalmologist or retina specialist. Laser therapy and/or vitrectomy and/or pharmacologic intervention should be considered.

- ❧ 6. Visually disabled people should be referred for low vision evaluation and rehabilitation.

Ocular Management of the Person with Diabetes



- ❧ 1. Diagnosis of the person with diabetes by the family physician.
- ❧ 2. Referral to optometrist for assessment OR referral to ophthalmologist, endocrinologist or other medical specialist OR referral to diabetes centre OR referral to fundus photography centre.
- ❧ 3. Report to family physician.

Optometric Management of the Person with Diabetes

- ❧ No ocular signs: counsel and advise regarding follow-up
- ❧ Ocular signs other than retinopathy: manage within scope
- ❧ Minimal retinopathy: counsel and advise regarding follow-up
- ❧ Greater than minimal retinopathy: refer to ophthalmologist or to fundus photography centre