

## Guidelines for the Collaborative Management of Persons with Diabetes Mellitus by Eye Care Professionals

### Background:

Diabetes is a disease that is growing rapidly in both incidence and prevalence in Ontario (in fact, dramatically exceeding the global estimates of the World Health Organization), and poses a major public health challenge on many fronts (1). More specifically, diabetic retinopathy is the most common cause of new cases of legal blindness in people of working age (2, 12). Approximately 12% of new cases of blindness are caused by diabetic retinopathy, and people with diabetic retinopathy are 25 to 29 times more likely than the general population to become blind within four years (3, 13). As many as 20% of patients newly diagnosed with type 2 diabetes (90% of cases of diabetes are type 2) having some evidence of diabetes-related eye disease at the time of diagnosis; approximately 5% will need immediate treatment to help prevent permanent vision loss. Within 7 years of diagnosis, 50% of patients with type 2 diabetes will have developed diabetes-related changes to the eye. By 15 years, this number increases to as many as 85%, with 25% requiring treatment (3). In type 1 diabetes, essentially 100% of patients will exhibit some diabetes-related eye disease 15 to 20 years after diagnosis (3, 8).

Vision loss from diabetic retinopathy is best treated, and, in fact, may be prevented, if caught in time (4). Unfortunately, US and Australian data show that 50% of people with diabetes are not receiving regular eye examinations (9, 10). These numbers are staggering when extrapolated to the approximately 2 million Canadians currently living with diabetes (one-third of whom are unaware they are diabetic), a number predicted to increase by 50% by the end of the decade (5). Further, the vascular changes that occur within the eye are predictive of vascular changes occurring elsewhere in the body (6, 7).

Eye care providers face a challenge in the management and coordination of care for patients with diabetes. The delivery of eye care must provide cost effective and efficient use of resources to minimize preventable vision loss.

*“Preventing blindness in people with diabetes is uniquely cost-saving and cost-effective. There are few cases in health care that are so self-evident.”*

*JC Javitt, MD, MPH*

*“Blindness: We Know What It Costs! Now What?”*

*Cost of Blindness Symposium (11)*



**Goal:**

The goal of these guidelines is to coordinate the services of ophthalmologists, optometrists and family physicians in the management of patients with diabetes, thereby ensuring the most effective use of these professionals in the interest of patient safety, quality of care, accessibility and cost effectiveness.

**Roles:****Family Physician:**

The first step in preventing ocular complications from diabetes is identifying the population at risk. Family physicians are responsible for identifying the majority of patients with diabetes and play a key role in the care and treatment process. As the coordinator of patient care, the family physician should promptly refer any newly diagnosed diabetic patient for an assessment by an optometrist and ensure established patients with diabetes attend an optometrist annually or as recommended by the optometrist. Ideally, each referral would be accompanied by lab results, including fasting blood glucose, HbA1c, and lipid profile.

**Optometrist:**

Optometrists will assess patients, on an annual basis at minimum, for ocular complications of diabetes and should provide a report of the findings to the family physician. In cases where diabetic eye disease is detected, optometrists should use generally accepted criteria (Appendix 1) when managing and/or referring the patient to a general ophthalmologist or retinal specialist. Referral for subsequent care should include a report to the ophthalmologist and family physician.

**Ophthalmologist:**

Ophthalmologists are responsible for assessing and (if necessary) treating diabetic eye disease to prevent, minimize or restore vision loss. Patients with diabetic eye disease who remain at high risk of vision loss should continue to be monitored by the ophthalmologist. Acceptance of patients referred from the optometrist should respect generally accepted guidelines (Appendix 1) and include a report to the optometrist and family physician.

All professionals share the common role of ensuring their patients are educated with respect to diabetes in general, and their specific clinical situation.

**Conclusion:**

The coordination of health care resources is essential in the care and treatment of patients at risk for ocular complications from diabetes. Timely optometric assessment of newly diagnosed diabetic patients will identify patients at risk for diabetic eye disease. Early intervention and treatment of eye disease through appropriate and timely referral for ophthalmologic care will assist in the preservation of quality vision for patients with diabetes. Inter-professional guidelines and generally accepted management and referral criteria will ensure appropriate coordination of care and the most effective use of health professional resources.

## References

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## Appendix 1

### Diabetic Retinopathy (DR) Disease Severity Scale

#### No Apparent Diabetic Retinopathy

#### Non-proliferative Diabetic Retinopathy (NPDR)

- Mild to moderate NPDR – micro-aneurysms, intra-retinal hemorrhages, hard exudates, foveal avascular zone abnormalities
- Moderate to severe NPDR – cotton wool spots, venous beading, intra-retinal microvascular abnormalities (IRMA)
- Severe NPDR (4-2-1 rule) – any one of: severe (>20) intra-retinal hemorrhages in each of four quadrants; definite venous beading in two or more quadrants; prominent IRMA in one or more quadrant(s).
- Very severe NPDR – any two of the above criteria.

**Proliferative Diabetic Retinopathy (PDR)** – one or more of: neovascularization (of the disc – NVD (particularly greater than 1 disc diameter in size); elsewhere – NVE); vitreous/pre-retinal hemorrhage.

#### Clinically Significant (Diabetic) Macular Edema (CSME)

- any retinal thickening within 500 microns of the center of the macula (fovea), or;
- retinal thickening at least one disc area in size, any part of which is within one disc diameter of the center of the macula (fovea), or;
- hard exudates within 500 microns of the center of the macula (fovea) with adjacent retinal thickening.

It is important to note that hard exudates are a sign of current or previous macular edema. CSME may be focal (leakage from micro-aneurysms or IRMA) or diffuse (leakage from the underlying capillary bed). CSME is the most common cause of decreased vision and blindness among patients with diabetes, and may occur concurrent with any stage of diabetic retinopathy.

## Management Criteria

Management of patients with diabetes and/or diabetic retinopathy (DR) should be consistent with generally accepted protocol. The following criteria should be considered:

- Mild to moderate NPDR – generally, patients with this degree of DR can be safely monitored by their optometrist every six to twelve months, with caution being taken to monitor for CSME (which necessitates a prompt referral to a retinal specialist). The one-year risk of progression to early PDR is 5.4 to 11.9%, and 16% of patients with mild to moderate NPDR progress to PDR within 4 years.
- Moderate to severe NPDR – these stages merit more frequent monitoring by an optometrist, generally at least every 6 months depending upon severity and co-morbidities; caution must be exercised in the presence of increasing retinal ischemia. The one-year risk of moderate NPDR progressing to early PDR is 26.3%, and 8.1% for progression to high-risk PDR.
- Severe and very severe NPDR – these presentations necessitate prompt referral to an ophthalmologist/retinal specialist, as they often indicate imminent PDR (the one-year risk of severe NPDR progressing to early PDR is 50.2%, and between 14.6% (for severe NPDR) and 45.0% (for very severe NPDR) for progression to high-risk PDR), and may warrant prophylactic laser surgery. Appropriate laser surgery can reduce the risk of severe vision loss/vitreectomy by 50%, particularly in patients with type 2 diabetes.
- CSME – as noted above, the presence of CSME necessitates an immediate referral to an ophthalmologist/retinal specialist for the consideration of fundus fluorescein angiography, and grid and/or focal laser photocoagulation. Appropriate laser treatment can reduce the risk of severe vision loss by more than 50%.