





## Clinical Notes for RANZCO Screening and Referral Pathway for Diabetic Retinopathy in Australia

This document should accompany the *RANZCO Screening and Referral Pathway for Diabetic Retinopathy in Australia* chart.

### 1. Patient Presentation

- a. All patients with diabetes should undergo screening for diabetic retinopathy at the time of diagnosis of diabetes and then every 2 years if no retinopathy is present (NHMRC 2008, Guideline 4, pg 72).
- b. Children with Type 1 Diabetes should begin screening for diabetic retinopathy when they reach puberty (NHMRC 2008, Guideline 5, pg 72).
- c. Pregnant women with a history of diabetes should be screened for the presence of diabetic retinopathy in the first trimester of pregnancy (NHMRC 2008, Guideline 10, pg 72).
- d. Pregnant women who develop gestational diabetes do not require screening for diabetic retinopathy.
- e. Recognise and record the source of referral for the patient having diabetic retinopathy screening.
- f. Patients with diabetes who present 'opportunistically' for optometric review should be screened for diabetic retinopathy and the results of the screening examination communicated to their caring physician in the same way as a patient who is referred specifically for diabetic retinopathy screening.
- g. Patients already under the care of an ophthalmologist for management of diabetic eye disease do not require repeat screening, provided they are taking part in a regular programme of monitoring and treatment.

### 2. Screening Examination

- a. Collect appropriate demographic data
  - i. Source of referral (contact details)
  - ii. Contact details for all caring physicians (General Practitioner, Endocrinologist, Ophthalmologist)
  - iii. Date of most recent screening examination for diabetic retinopathy (i.e. interval since last diabetic retinopathy screening examination) (Failure to attend for diabetic retinopathy screening examinations is a risk for vision loss – Diabet Med. 2016 Jul;33(7):904-11. doi: 10.1111/dme.12957. Epub 2015 Oct 6. Screening attendance, age group and diabetic retinopathy level at first screen. Scanlon PH1, Stratton IM1, Leese GP2, Bachmann MO3, Land M4, Jones C5,



Ferguson B6; Four Nations Diabetic Retinopathy Screening Study Group.)

b. History

- i. Diabetes duration, medications, control
- ii. Vascular risk factors: Hypertension, Lipids, Smoking
- iii. Systemic Disease and complications of Diabetes
  1. Cardiovascular
  2. Cerebrovascular
  3. Renal
  4. Neuropathy
- iv. Past Ocular History
  1. Diabetic Retinopathy Treatment
  2. Other
- v. "Clinical Modifiers": Risks for progression of Diabetic Retinopathy

Patients at higher risk of progression of diabetic retinopathy should be examined yearly if there is no evidence of diabetic retinopathy. (NHMRC 2008, Guideline 6, pg 72)

1. Duration of diabetes greater than 15 years
  2. Poor Glycaemic control (HbA1c > 8% or 64 mmol/mol)
  3. Systemic Disease
    - a. Poorly controlled hypertension, blood lipids
    - b. Other diabetic complications (Cardiac disease, cerebrovascular Disease, Renal disease)
    - c. Foot Ulcers (Neuropathy, Peripheral Vascular Disease)
  4. Pregnancy
  5. Indigenous, Non-English speaking
- c. Assessment of Visual Acuity
- i. Best corrected visual acuity
  - ii. (Pinhole vision is acceptable)
  - iii. Recent or rapid deterioration in visual acuity should prompt referral even if vision is > 6/9
- d. Digital Fundus Photography is the expected standard for fundus examination
- i. Pupil Dilatation
    1. Increases the sensitivity and specificity of detection of diabetic retinopathy
    2. Is Not mandatory if a high quality image is obtainable with a non-mydratiac camera or Ultra-Wide Field (UWF) camera (Ophthalmology 2016;123:1360-1367) Identification of Diabetic Retinopathy and Ungradable Image Rate with Ultrawide Field



Imaging in a National Teleophthalmology Program Paolo S. Silva, MD, et al) (Ultra-wide-field imaging in diabetic retinopathy; an overview Khalil Ghasemi Falavarjani et al, Journal of Current Ophthalmology 28 (2016) 57-60)

3. Is Mandatory if a high quality image cannot be obtained with a non-mydratic camera or UWF camera
  - ii. Recommended images
    1. UWF Image
    2. Two 45 degree fundus images should be captured:
      - a. Centred on the macula
      - b. Nasal fundus, showing at least 3 disc diameters of the nasal fundus from the edge of the optic disc (this is the standard for the English NDS programme and the NZ programme)
  - iii. OCT Assessment of the macula aids the detection of diabetic macular oedema. However, its use in diabetic retinopathy screening programmes is not yet validated and therefore OCT imaging is not mandatory or recommended as part of a screening examination.

### 3. Grading of Diabetic Retinopathy

- a. Should be undertaken by the optometrist who is conducting the screening examination. The screener will therefore also be responsible for determining:
  - i. Screening interval (i.e. interval until the patient should return for the next diabetic retinopathy screening examination)
  - ii. Referral for ophthalmologist review, if required.
- b. Grading of diabetic retinopathy has 3 elements:
  - i. Visual Acuity
  - ii. Image Quality
  - iii. Severity of Diabetic Retinopathy
- c. It is recommended that all professionals involved in the screening and grading of diabetic retinopathy should be familiar with the epidemiology and clinical features of diabetic retinopathy. This could involve completion of an on-line diabetic retinopathy grading course (eg University of Melbourne Course).

### 4. Grading of Visual Acuity

- a. Referral is recommended if visual acuity is less than 6/9.  
Substantial centre-involving diabetic macular oedema can be present despite normal vision.



- b. If visual acuity has fallen recently, referral should also be considered.

## 5. Grading of Image Quality

- a. The image should be of sufficient clarity and field to allow reliable detection of diabetic retinopathy. The small retinal vessels should be visible.
- b. The images should cover an adequate area of the fundus (two 45 deg images as detailed earlier)

## 6. Grading of Diabetic Retinopathy

- a. Grading is based upon the International Clinical Diabetic Retinopathy and Diabetic Macular Oedema Severity Scale. (Proposed International Clinical Diabetic Retinopathy and Diabetic Macular Edema Disease Severity Scales. C. P. Wilkinson et al. Ophthalmology 2003;110:1677–1682)
- b. Grading should focus separately on the two aspects of diabetic retinopathy that cause most vision loss
  - i. Diabetic Macular Oedema
  - ii. Non-proliferative Diabetic Retinopathy and the risk of Proliferative Diabetic Retinopathy.
  - iii. Patients assessed to have Moderate Non-proliferative Diabetic Retinopathy should:
    - 1. Have a comprehensive ophthalmic examination including dilated examination of the fundus.
      - a. Many patients with diabetic retinopathy will have changes that are outside the 45 degrees of a standard single field non-mydratic retinal camera
        - i. 8-15% have retinopathy only present outside this zone
        - ii. 27% with proliferative diabetic retinopathy have neovascularisation outside this zone
        - iii. (Diabetic retinopathy as detected using ophthalmoscopy, a nonmydratic camera and a standard fundus camera. Klein R, Klein BE, Neider MW, Hubbard LD, Meuer SM, Brothers RJ. Ophthalmology. 1985 Apr;92(4):485-91)
    - 2. Routine referral to an ophthalmologist with an interest in the management of diabetic retinopathy is recommended, but not mandatory
    - 3. A collaborative regimen of monitoring of patients with moderate non-proliferative diabetic retinopathy could be



established between the screening optometrist and the ophthalmologist.

**7. Communication of Results of Screening Examination for Diabetic Retinopathy**

- a. The result of diabetic retinopathy screening should be communicated, in a timely fashion, to the patient, and the patients caring physicians (General Practitioner, Endocrinologist and Ophthalmologist).
- b. The development/presence of diabetic retinopathy is an important finding, with implications for the risk of vision loss, and for the risk of systemic diseases related to diabetes including myocardial infarction, stroke and renal disease (Diabetes Care. 2007 Jul;30(7):1742-6. Epub 2007 Mar 26. Diabetic retinopathy and the risk of coronary heart disease: the Atherosclerosis Risk in Communities Study. Cheung N1, Wang JJ, Klein R, Couper DJ, Sharrett AR, Wong TY.)
- c. This allows appropriate steps to be taken to improve diabetes management (blood glucose control) and the management of other vascular risk factors in order to slow the progression of diabetic retinopathy and the development and progression of other vascular complications of diabetes including myocardial infarction, stroke, renal disease and foot disease.