

The Clinician's Guide to Diabetes Mellitus Management

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The Clinician's Guide to Diabetes Management

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PATIENTS AT HIGH RISK FOR DIABETES

- Pre-diabetes
- Positive family history
- BMI ≥ 30 kg/m² or waist ≥ 35 inches (F) ≥ 40 inches (M)
- Fasting glucose ≥ 100 mg/dl
- A1c test $\geq 5.7\%$ or oral glucose tolerance ≥ 140 @ 2 hrs
- Lens glycation ≥ 80 th percentile for age

- Patient education about exercise/diet/portion control
- Dilated fundus exam to assess for any retinopathy

- Annual dilated fundus examination if no retinopathy
- Recommend sleep study if neck ≥ 17 inches or snorer

- Measure macular pigment (higher MPOD/serum levels of Lutein and Zeaxanthin are associated with lower risk of developing T2DM)

- If diabetic retinopathy is detected, refer to PCP/Endocrinology and **manage per "DR Patient Care Algorithm" on next page**



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Dr. Paul Chous was diagnosed with Type 1 diabetes mellitus at age five. He completed his undergraduate education at Brown University and UC Irvine, and then received his Masters and Doctorate of Optometry degrees with highest honors from UC Berkeley. Paul has a private practice specializing in diabetes eye care and education in Tacoma, WA.



JEFFRY D. GERSON, OD, FAAO

Dr. Gerson has been in several practice settings since graduating from Indiana University School of Optometry in 1997. Before entering his current private practice, he was part of a retinal referral center where he not only saw patients, but was coordinator of several NEI clinical trials. Dr. Gerson lectures internationally and has had papers published in numerous optometric journals and other sources as well.

PATIENTS WITH DIABETES

- Diagnosis by physician
- Fasting glucose ≥ 126 mg/dl and/or
- A1c test $\geq 6.5\%$
- Oral glucose tolerance ≥ 200 mg/dl @2 hrs
- Lens glycation ≥ 90 th percentile for age

- As for Pre-diabetes – **see "Practical Patient Tips for Good Blood Glucose Control" on page three**
- Educate patient about appropriate metabolic goals for diabetes:
 1. A1c $\leq 6.5\%$ for motivated patients with longer life expectancy, few co-morbidities and lower risk of severe hypoglycemia
 2. Blood pressure $\leq 140/90$
 3. LDL ≤ 100 mg/dl and triglycerides ≤ 150 mg/dl
- Dilated fundus exam to assess for any retinopathy – **see "DR Patient Care Algorithm" on next page**
 - Measure the patient's blood pressure
 - If neck circumference is ≥ 17 inches or any history of snoring or daytime sleepiness, refer or inquire about sleep study to rule out apnea

- Perform individualized risk analysis for the development of sight-threatening diabetic retinopathy ([see http://www.retinarisk.com](http://www.retinarisk.com))

- Measure macular pigment (low in diabetes and lower still in diabetic retinopathy)



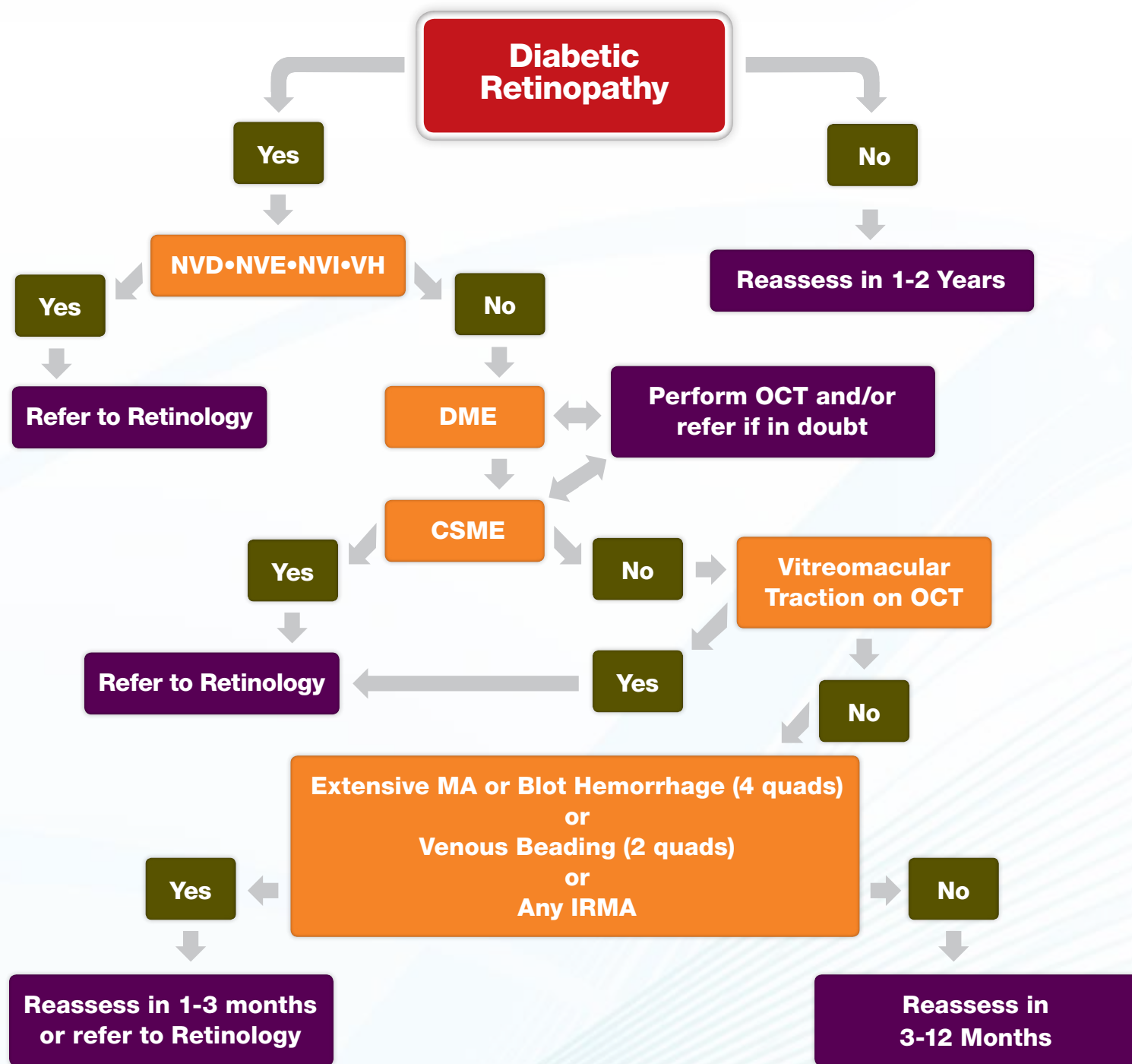
- Assess serum vitamin D and B12 levels; deficiencies are associated with higher risk of DR

- Prescribe phytonutrients to protect blood vessel integrity and improve visual function in patients with diabetes

These are general patient care guidelines - each patient should be managed individually based on these and other factors, according to the provider's professional opinion and current standards of care.

Diabetic Retinopathy Patient Care Algorithm

A. PAUL CHOUS, MA, OD, FAAO; JEFFRY D. GERSON, OD, FAAO; AND JOSEPH J. PIZZIMENTI, OD, FAAO



NVD = neovascularization of the optic disc
NVE = neovascularization elsewhere
NVI = neovascularization of the iris or angle
MA = microaneurysm formation

VH = vitreous hemorrhage
DME = diabetic macular edema
CSME = clinically significant macular edema
IRMA = intraretinal microvascular abnormalities

These are general patient care guidelines - each patient should be managed individually based on these and other factors, according to the provider's professional opinion and current standards of care.

Practical Patient Tips for Good Blood Glucose Control

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- Eat a lower glycemic index – Mediterranean-type diet that contains a variety of vegetables and whole fruits (not fruit juices). Diets like this have been proven to lower blood glucose levels.
- Eat breakfast – studies show this reduces the risk of type 2 diabetes and results in better A1c.
- Substitute water or unsweetened tea for soda pop and avoid foods and beverages sweetened with high fructose corn syrup.
- Limit your consumption of packaged snack foods (crackers, cookies, even ‘sugar-free’ snacks) that contain lots of refined carbohydrates that boost blood sugar levels.
- Eat smaller, more frequent meals to prevent blood sugar spikes.
- Make sure vegetables fill at least half of your plate at meals.
- Eat smaller portion sizes and try to limit total carbohydrate content of any big meal to 30 grams or less of carbohydrate (look at food labels to determine carbohydrate content and portion size per serving).
- Try taking 2 TBSP of apple cider vinegar before meals – studies show this limits post-meal blood sugar levels.
- Eat more slowly – this gives your stomach more time to feel full without over-eating; try putting your utensil down while you chew your food and don’t pick it back up until you have thoroughly chewed and swallowed the last bite.
- Get regular exercise – at least 30 minutes of moderate intensity physical activity each day. Exercise, even small amounts, dramatically improves insulin sensitivity and lowers blood glucose levels.
- A good way to get exercise is to buy a pedometer and walk 8-10 thousand steps each day.
- Make sure you take your prescribed diabetes medications, on time, every time.
- If your blood glucose levels and hemoglobin A1c (blood test that measures average blood glucose levels over 2-3 months) remain higher than your doctor’s recommended target after taking the above steps, ask about getting a continuous glucose monitoring system to help determine the best treatment plan.

Diabetes Educational Resources:

- www.Optospace.com/DM
(diabetes education video series for optometrists developed by A. Paul Chous, OD, FAAO and Jeffry Gerson, OD, FAAO)
- www.retinarisk.com
(risk calculator for sight-threatening diabetic retinopathy)
- www.presentdiabetes.com
(diabetes education videos delivered by a variety of diabetes sub-specialists)
- <http://www.diabetes.org>
(the official site for the American Diabetes Association)
- www.diabetesincontrol.com
(free weekly e-zine for health care professionals delivering late-breaking diabetes research news)
- <http://www.ocularnutritionociety.org/>
(the official site for the Ocular Nutrition Society)
- www.dLife.com
(patient oriented site on all aspects of diabetes)
- http://www.dlife.com/diabetes/information/inspiration_expert_advice/expert_columns/chous_columns.html
(link to eye care columns for patients authored by optometric diabetes specialist A. Paul Chous, OD, FAAO)
- www.AOA.org/diabetes
(the diabetes resource page of the American Optometric Association)
- <http://aoa.uberflip.com/i/215847>
(2013 AOA Diabetes Roundtable: Optometrists Form Front Line in Battling Diabetes)
- <http://www.aoa.org/Documents/EBO/EyeCareOfThePatientWithDiabetesMellitus20CPG3.pdf>
(2014 AOA Evidence Based Clinical Practice Guideline: Eye Care of the Patient With Diabetes Mellitus)
- <http://one.aao.org/preferred-practice-pattern/diabetic-retinopathy-ppp--september-2008-4th-print>
(Academy of Ophthalmology Preferred Practice Patterns 2012: Diabetic Retinopathy)
- www.ndep.nih.gov/media/PPODprimer_color.pdf
(National Diabetes Education Program interdisciplinary guide for co-management of diabetes patients between pharmacists, podiatrists, optometrists and dentists - PPOD)
- <http://www.cdc.gov/diabetes/>
(CDC Division of Diabetes Translation materials and resources concerning diabetes statistics and research)
- <http://explore.eyepromise.com/recordedwebinars>
(free educational webinars conducted by fellow EyeCare Professionals, including A. Paul Chous, OD, FAAO and Jeffry Gerson, OD, FAAO)
- <http://www.eyepromise.com/doctors/products/eyepromise-dvs/>
(for additional information on EyePromise DVS – nutraceutical for retinal health)