

Diabetic Eye Disease

A Multidisciplinary Discussion on Managing Diabetic Eye Disease

BASED ON A PRESENTATION BY:



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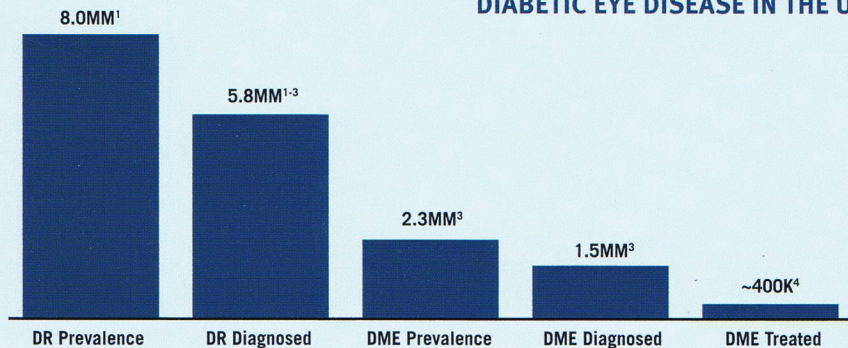


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The diabetes population is growing at astounding proportions. By 2010, the prevalence of diabetes exceeded 7.5 percent in most U.S. states.¹ In 2012, diabetes affected 29.1 million people nationwide.² It is projected that, by 2050, one in three to five adults will have diabetes (diagnosed or undiagnosed),³ including many young adults. Numerous others will have prediabetes. The rising preponderance of obesity is a major contributor to this “epidemic” of diabetes mellitus.

Diabetes and its complications represent an enormous burden for the health-care system. On average, patients with diabetes visit a doctor 24 times each year to address the many complications related to this disease.⁴ Macrovascular and microvascular problems abound in this population. A diabetes diagnosis alone is associated with a 1.5 times greater risk of hospitalization due to stroke.⁵ In 2010, diabetic foot disease was responsible for 73,000 amputations.⁵ Microvascular complications of diabetes include nephropathy, neuropathy, and retinopathy. Diabetes causes approximately 44 percent of renal failures.⁵ Sixty to 70 percent of diabetics will experience neuropathy, many of whom will have severe pain that impairs quality of life.⁵⁻⁷ Moreover, diabetic retinopathy (DR) occurs in approximately 21 percent of patients with diabetes,⁷ and 70 percent of those with retinopathy will have diabetic macular edema (DME).⁸ By 2020, approximately 9.6 million patients will have DR.⁹

DIABETIC EYE DISEASE IN THE US



1. NHANES 2005-2008, projected to 2012 US population.
 2. Centers for Disease Control and Prevention. www.cdc.gov. Accessed June 9, 2014. Saaddine JB, et al. *Arch Ophthalmol.* 2008;126(12):1740-1747.
 3. BioTrends Research Group. TreatmentTrends®: Diabetic Retinopathy/Diabetic Macular Edema (US) 2013.
 4. Proprietary Quantitative Market Research (n=103 retina specialists, n=23,994 DME eyes with central involvement); fielded November 2013.

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Retinal Manifestations of Diabetes

Approximately 4.4 percent of diabetics are at risk for severe vision loss.⁶ Few patients are aware of the substantial risk of vision loss, and many erroneously assume that symptoms of vision loss will be apparent. Because patients can view their cellular phone or television without difficulty, they may believe that eye exams are not needed. DR can progress rapidly; it is essential that diabetic patients receive screening for retinal disease so that appropriate interventions can be initiated before irreversible damage occurs.^{10,11} DR disease severity varies greatly—ranging from nonproliferative DR (which can be mild, moderate, or severe) to proliferative DR and possible vision loss. As DR progresses, patients may present with microaneurysms, intraretinal hemorrhage, vitreous hemorrhage, exudates, macular ischemia, neovascularization, and traction retinal detachment. Seventy percent of patients with the most severe form of DR will experience progression to DME.⁸ Currently, of the 2.3 million patients with DME, only about half a million are being treated for it.^{7,12,13}

Barriers to Screening

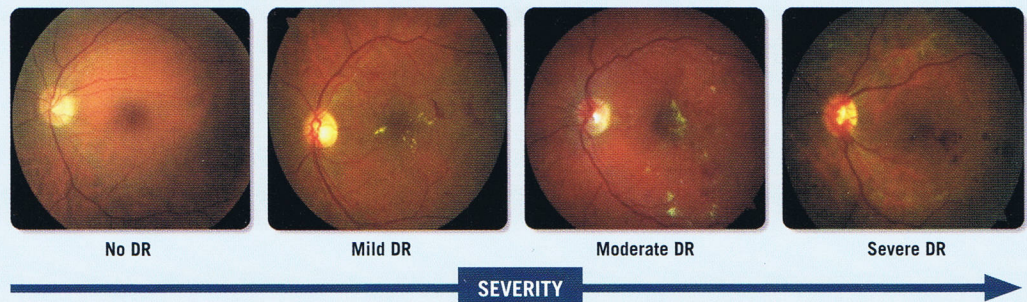
Patient barriers to screening include denial, lack of awareness, transportation issues, and cost concerns.¹⁴ Other medical problems may take precedence for these patients. Moreover, the availability of eye care providers may be limited, and primary care physicians may have inadequate knowledge of DR and DME.^{14,15} A 2013 study demonstrated that among patients with DME, only 45 percent reportedly were informed by a physician that the diabetes had affected their eyes or caused retinopathy.¹⁶ The same study showed that only 59.7 percent of people with DME had an eye exam with pupil dilation in the previous year.¹⁶

Overcoming Barriers to Care

Educating the patient is vital. Patients should be made aware that DME can develop at any stage of diabetes and is often asymptomatic. They must be told that high blood glucose is associated with retinopathy. They should know their current A1c level as well as their target level. It is hoped that emphasizing these facts will resonate with patients, particularly because patients have indicated that blindness is one of their greatest fears.

Awareness of the need for annual eye examinations must be heightened among healthcare professionals as well as patients. Boosting knowledge of the effects of diabetes on vision may reduce the number of patients who believe that eye

RETINAL MANIFESTATIONS OF DIABETES



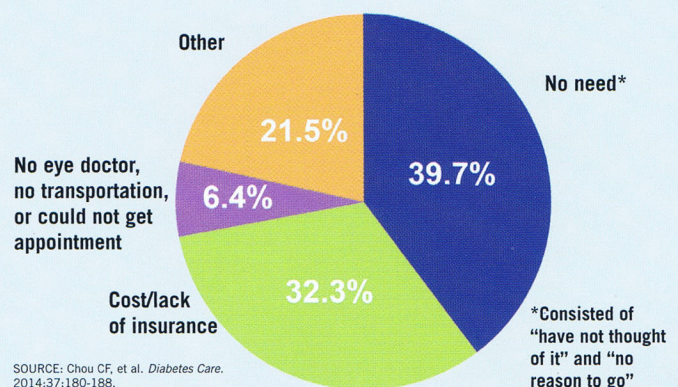
exams are not needed. Showing your patients actual images from their exam may strengthen the impact of our messages. Exam results should be explained clearly to patients, in language that they understand.

Although public health campaigns may increase awareness of diabetic eye disease, effective communication with patients and among specialists is paramount. This includes ophthalmologists, endocrinologists, and others who care for patients with diabetes. Recommendations from an endocrinologist's perspective are shown below.¹⁷ Endocrinologists should be aware of all specialists involved in the care of their patients, and specialists should be cognizant of all treatments received by patients. Utilizing current technology, such as electronic records and text messaging, can facilitate timely and effective communication of information among physicians.

Ophthalmologists and other specialists should understand the evolving treatment landscape for diabetes and related eye disorders. This knowledge should be updated often, especially because treatments for diabetes and its ocular complications have changed drastically in recent years.

Also important are targeted interventions, such as reminders of physician appointments, particularly for patients who are prone to noncompliance, or who are economically challenged, lack health insurance, are 40 years of age or older, or whose diabetes was diagnosed more than 10 years ago.¹⁴

WHY PATIENTS DON'T RECEIVE ANNUAL EXAMS



SOURCE: Chou CF, et al. *Diabetes Care*. 2014;37:180-188.

Tips From The Endocrinologist To Optimize Care Of Patients With Diabetic Eye Disease

General Recommendations

- Know the current guidelines of the American Diabetes Association
- Know your patient's A1c level; patients with very high blood glucose tend to have retinopathy
- Encourage optimization of glycemic control, blood pressure, and cholesterol levels
- Reinforce the importance of regular exercise and a healthy diet
- Educate patients about diabetic eye disease, and empower them to take control of their well-being
- Be aware of all treatments received by the patient (e.g., TZDs/glitazones)
- Communicate often with all physicians involved in the patient's care
- Provide the endocrinologist with clear summaries of findings, recommendations, and treatment plans—and avoid the use

of abbreviations (e.g., OS vs. left eye).

Screening

- Perform comprehensive eye examination, including screening for retinopathy
 - Immediately upon diagnosis of type 2 diabetes
 - Within first 5 years of diagnosis of type 1 diabetes
 - Annually thereafter, or more often if eye disease progresses rapidly

Treatment and Referral

- Know the current treatment options, and ensure prompt treatment when appropriate
 - Ideal treatment is primary prevention through appropriate control of blood glucose levels
 - Refer patients with these conditions to a retinal specialist: macular

edema, proliferative DR, severe nonproliferative DR

- Laser photocoagulation is indicated to reduce the risk of vision loss in patients with high-risk DR or clinically significant macular edema, and in some patients with severe nonproliferative DR
- Corticosteroid intravitreal implants are indicated for the treatment of DME
- Anti-VEGF therapy is indicated for DME and DR in patients with DME, and these treatments have been shown to improve vision loss

DME, diabetic macular edema; **DR**, diabetic retinopathy; **VEGF**, vascular endothelial growth factor.

Portions adapted from: American Diabetes Association. Standards of medical care in diabetes—2015. *Diabetes Care*. 2015;38(suppl 1):S1-S93.

Treating Diabetic Macular Edema

When retinal disease is detected, the ophthalmologist should explain the extent of the disease to the patient and should discuss the treatment options available. Although there is no cure for DME, many effective treatments exist.

The treatment landscape for DME has evolved substantially in the past two decades, and current therapies include laser treatments, steroids, and injection of vascular endothelial growth factor (VEGF) inhibitors into the eye. From 1985 to 2008, focal laser treatment generally was considered the standard of care for DME, based on its success in reducing the risk of vision loss by 50 percent among patients whose

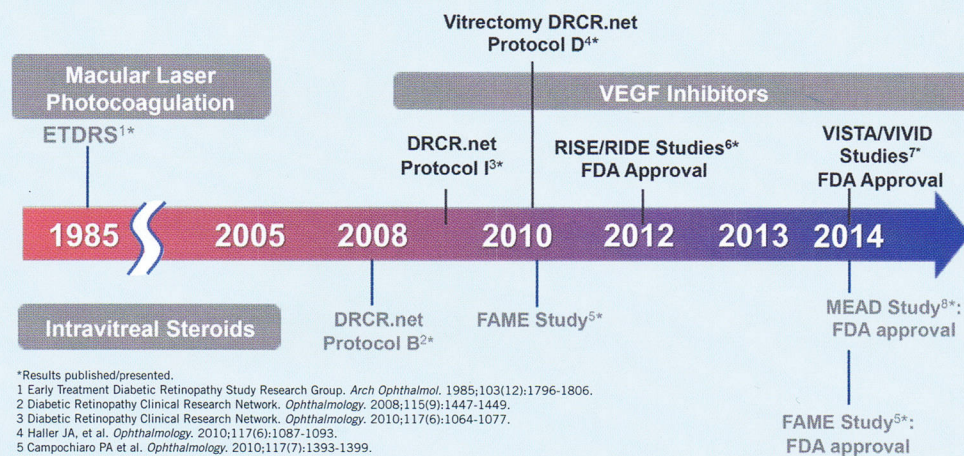
macular edema involved or threatened the fovea.¹⁸ Years later, when data emerged from the Protocol I study of the Diabetic Retinopathy Clinical Research Network (DRCR), alternate treatment options were explored.¹⁹ Findings from that DRCR study and many other trials have led to the widespread use of anti-VEGF agents as current frontline therapy for many patients with DME.¹⁹⁻²¹

Conclusion

The soaring prevalence of diabetes poses additional challenges for everyone involved in caring for patients with this disease. Heightened awareness of diabetic eye disease is

essential, particularly because it is often asymptomatic, and targeted interventions are needed. Ophthalmologists and endocrinologists can collaborate to educate diabetic patients about risks to their vision and to emphasize the importance of regular eye examinations. Although effective treatments exist for DR and DME, primary prevention is ideal. Patients should be encouraged to maintain controlled blood glucose levels and make healthy lifestyle changes to complement their medical care.

DIABETIC MACULAR EDEMA: Treatment Landscape



*Results published/presented.

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PRESENTERS' FULL DISCLOSURES

DR. BRAR Regeneron: C.

DR. HO Alcon Laboratories: C,L,S; Allergan: S; Endo Optiks: C; Genentech: C,L,S; Janssen: C,L,S; NEI/NIH: S; Ophthotech: C,S; PanOptica: C,S; PRN: C,O,S; Regeneron: C,L,S; Second Sight: C,S; Thrombogenics: C,L,S.

DISCLOSURE KEY

DISCLOSURE CATEGORY	CODE	DESCRIPTION
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Employee	E	Employed by a commercial company.
Speakers bureau	L	Lecture fees or honoraria, travel fees or reimbursements when speaking at the invitation of a commercial company.
Equity owner	O	Equity ownership/stock options in publicly or privately traded firms, excluding mutual funds.
Patents/Royalty	P	Patents and/or royalties for intellectual property.
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