MODULE 1.0
Introduction of Diabetic Macular Edema

Diabetic macular edema (DME) is a consequence of diabetic retinopathy, an eye-related complication of both type 1 and type 2 diabetes. Diabetic retinopathy develops when chronically high levels of blood sugar (glucose) damage and block the tiny blood vessels (capillaries) in the retina of the eye. Cut off from needed oxygen, the hypoxic retinal tissue responds by increasing, or upregulating, the expression of a small glycoprotein called vascular endothelial growth factor (VEGF). As a result of the elevated levels of VEGF, the retinal capillaries become leaky, causing the macula to swell and thicken, distorting vision.[1] This is the condition known as DME.

Diabetes is a serious disease, with comorbidities that can severely affect a person's quality of life. One of these complications is vision loss. Diabetes is a leading cause of blindness. On average, one-third of people with diabetes have retinopathy, although in some countries, such as China, Malaysia, and South Africa, the rate is closer to one-half.

In many regions of the world, diabetic retinopathy is the leading cause of vision loss among working-age adults (20-74 years),[2] and among people with diabetic retinopathy, the most frequent cause of vision loss is DME. One large epidemiological study found, for example, that 26% of people with diabetic retinopathy have DME.[2]

Given that an estimated 387 million people worldwide have diabetes,[3] DME presents a significant public health issue that is growing: the number of people with diabetes is expected to increase to almost 592 million by 2035 - or 10% of the world's adult population.[3]

By early 2014, it had become clear that rapid advances in anti-VEGF therapies were revolutionizing the treatment of DME - and the field of ophthalmology. Recognizing the clinically transformative nature of these remarkable therapies, the Angiogenesis Foundation decided to create this comprehensive massive open online course to review the biology of DME at the molecular and tissue level, discuss the impact that the new drugs are having on the treatment of DME, identify the challenges that such treatments present to patients and clinicians, and present the questions that still need to be answered to ensure the very best outcomes for patients with the disease.

References

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2. Early Treatment Diabetic Retinopathy Study Research Group. Early photocoagulation for diabetic retinopathy ETDRS report number 9. *Ophthalmology*. 1991;98(12):1464-1474.

3. International Diabetes Federation. *IDF Diabetes Atlas,* 6th ed. Brussels, Belgium: International Diabetes Federation; 2013. www.idf.org/diabetesatlas. Accessed October 13, 2015.