

# Study identifies blood glucose levels that predict 10-year risk of retinopathy

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Individuals who have higher blood glucose levels and poorer control of those levels over time appear more likely to develop eye-related complications 10 years later, according to a report in the February issue of *Archives of Ophthalmology*.

The high [blood glucose levels](#) accompanying diabetes are known to be associated with microvascular complications, including the eye condition retinopathy, according to background information in the article.

"However, some controversy concerns the actual value of this glycemic threshold for identifying retinopathy," the authors write. "It is now well established that the non-diabetic population also has retinopathy, albeit at a lower frequency than patients with diabetes and in a milder form, indicating that there may be factors other than fasting plasma glucose levels that increase the risk of retinopathy."

Pascale Massin, M.D., Ph.D., of Hôpital Lariboisière, Paris, and colleagues in the Data From an Epidemiological Study on the Insulin Resistance Syndrome (DESIR) Study Group examined the retinas of 700 men and women (average age 52) who were enrolled in the study. Over the preceding nine years, their fasting plasma glucose levels and hemoglobin A1C (HbA1c, a measure of blood glucose control over time) had been tracked. In that time, 235 had diabetes (defined as being treated for the disease or having a glucose level of 126 milligrams per deciliter or higher at least once), 227 had an impaired fasting plasma glucose level (110 to 125 milligrams per deciliter) and 238 always had glucose levels within normal limits (less than 110 milligrams per

deciliter).

Of the participants, 44 were classified as having retinopathy, including 19 with [diabetes](#), 19 with impaired fasting glucose levels and six with normal glucose levels. Compared with those without retinopathy, those with the condition had higher average levels of fasting plasma glucose 10 years prior (130 vs. 106 milligrams per deciliter) and higher HbA1c (6.4 percent vs. 5.7 percent).

"Levels of HbA1c and fasting plasma glucose at baseline were related to the presence of retinopathy 10 years later, and the levels at which the positive predictive values increased provide a rationale for the choice of thresholds for the definition of hyperglycemia associated with 10-year retinopathy," the authors write. "We propose that thresholds of 108 milligrams per deciliter for fasting plasma glucose concentration and 6.0 percent for HbA1c level could be used to define those who are at risk of retinopathy; this is in agreement with our observation of a risk of retinopathy within the impaired fasting glucose range (fasting plasma glucose level, 110 milligrams per deciliter or higher)."

"Factors other than glucose measures play only a minor role in retinopathy," they conclude.

**More information:** Arch Ophthalmol. 2011;129[2]:188-195.

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