

# Risk Factors for Visual Field Deterioration in the United Kingdom Glaucoma Treatment Study

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**PURPOSE:** The United Kingdom Glaucoma Treatment Study (UKGTS) investigated the visual field (VF) -preserving effect of medical treatment in open-angle glaucoma (OAG) . The objective of this analysis was to identify risk factors associated with VF deterioration.

**DESIGN:** Randomized, double-masked, placebo-controlled multicenter trial.

**PARTICIPANTS:** Five hundred sixteen participants with previously untreated OAG were recruited prospectively in 10 United Kingdom centers.

**METHODS:** Eligibility criteria were modeled on those for the Early Manifest Glaucoma Trial. Study participants were randomized to either latanoprost 0.005% or placebo eye drops. The observation period was 2 years and involved, among other procedures, VF testing and intraocular pressure (IOP) measurement at 11 scheduled visits, with clustering of tests at baseline, 18 months, and 24 months. Guided progression analysis pattern deviation maps were used to determine VF deterioration. Cox regression was used to compute the hazard ratios (HRs) and respective 95% confidence intervals (CIs) while accounting for the correlation within sites. Model selection was guided by backward stepwise selection conducted on the model containing all variables that were significant at the 0.2 level in the univariate analysis. Follow-up variables that showed collinearity with baseline values were not retained in the final model.

**MAIN OUTCOME MEASURE:** Time to VF deterioration.

**RESULTS:** Treatment with latanoprost reduced the HR, for VF deterioration by 58% (HR, 0.42; 95% CI, 0.27-0.67; P = 0.001) . Factors associated with deterioration were bilateral disease (HR, 1.59 for yes vs. no; 95% CI, 1.02-2.50; P = 0.041) , higher baseline IOP (HR, 1.07 per mmHg; 95% CI, 1.02-1.12; P = 0.008) , and disc hemorrhage at visit 1 (HR, 2.08; 95% CI, 1.07-4.04; P = 0.030) . Smoking (current or previous) was associated with a reduced HR, for VF deterioration (HR, 0.59; 95% CI, 0.37-0.93; P = 0.023) . No other evaluated factors were found to be statistically significant in the multivariable analysis.

CONCLUSIONS: In the UKGTS, treatment with latanoprost halved VF deterioration risk. Bilateral disease, higher IOP, and disc hemorrhage were confirmed as risk factors for deterioration; smoking history seemed to be protective against VF deterioration.

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