

# Diabetic Retinopathy Study (DRS) - 1981



## Objective

To determine whether laser photocoagulation helps prevent severe vision loss from proliferative diabetic retinopathy (PDR); and whether a difference exists in the efficacy and safety of argon laser versus xenon laser.

## Methods

**Design:** Multi-center prospective RCT

**Sample Size:** n= 1758

**Study Criteria:**

- 1) Best corrected visual acuity (BCVA) of 20/100 or better in each eye
- 2) PDR in 1 eye or severe NPDR in both eyes

**Treatment Groups:**

- No treatment\*
- Panretinal photocoagulation (PRP) with either argon laser or xenon arc

\*After 15 months, study protocol was changed to laser untreated eyes with high-risk characteristics (HRCs)

**Outcome Measures:**

- Severe vision loss (SVL) defined as BCVA <5/200 at two or more consecutive visits
- Study follow up period was over 5 years at 4-month intervals.

## Results

**Point 1:** PRP with both argon and xenon laser reduced SVL by 50% or more in eyes with PDR compared to no treatment through 5 year follow up.

**Point 2:** Eyes with the following HRCs of advanced diabetic retinopathy should be lasered to avoid SVL:

- Moderate/severe neovascularization on or within 1 disc diameter of the optic disc (NVD)
- Mild NVD with concurrent vitreous hemorrhage or preretinal hemorrhage
- Moderate or severe neovascularization elsewhere (NVE) with concurrent vitreous hemorrhage or preretinal hemorrhage

**Point 3:** Risk of SVL varies based on baseline severity of diabetic retinopathy

- PDR with HRCs (26% in untreated eyes versus 11% in treated eyes)
- PDR without HRCs (7.0% in untreated eyes versus 3.92% in treated eyes)
- Severe NPDR (3.2% in untreated eyes versus 2.8% in treated eyes)

**Point 4:** Eyes treated with xenon arc were more likely to develop visual field defects (50%) and decreased BCVA (19%) compared to argon-treated eyes (5% and 11% respectively).

**TLDR: Photocoagulation reduced the 2-year risk of blindness by over 50% in eyes with PDR. Argon laser is the preferred instrument for laser photocoagulation.**

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