



Wednesday, May 23, 2018

[News & Perspective Drugs & Diseases CME & Education Academy Consult Video](#) [New Perspective](#) > [Medscape Ophthalmology](#) > [Viewpoints in Retina](#)

COMMENTARY

Treat-Extend-Stop Protocol for Wet AMD: Long-term Outcomes

Matt R. Starr, MD; Sophie J. Bakri, MD

Consistent Long-term Therapy of Neovascular Age-Related Macular Degeneration Managed by 50 or More Anti-VEGF Injections Using a Treat-Extend-Stop Protocol

Adrean SD, Chaili S, Ramkumar H, Pirouz A, Grant S
Ophthalmology. 2018 Feb 10. [Epub ahead of print]

Study Summary

A retrospective chart review was performed for 71 eyes of 67 patients with neovascular age-related macular degeneration (AMD) treated with intravitreal anti-vascular endothelial growth factor (VEGF) injections using a treat-extend-stop protocol.

The protocol consisted of an initial series of three anti-VEGF injections at 4- to 6-week intervals. If, after this initial series, the macula was found to be without fluid, then the treatment was extended by 1- to 2-week intervals until a 12-week interval between injections was achieved. Patients then received two injections at 12-week intervals. If the macula remained dry, the treatments were suspended, and patients were monitored at 4-week intervals. Monitoring was extended by 2 weeks until the interval was 12 weeks. At that time, patients were monitored quarterly for signs of recurrence. If a patient developed new fluid or had worsening visual acuity related to their AMD, the interval was decreased, or they were initiated on a different anti-VEGF agent.

The study included patients only if they had received at least 50 intravitreal anti-VEGF injections. Patients who developed vision loss secondary to ocular conditions unrelated to their AMD were excluded.

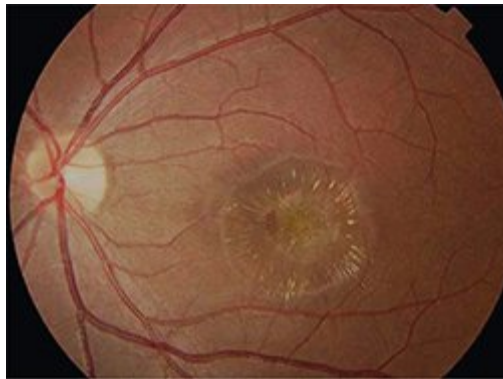
The average time to the 50th injection was 6.5 years, and patients were primarily managed with bevacizumab (64.5%). Average follow-up was 8 years. On average, patients received 9.6 injections per year or an injection every 5.4 weeks through the 51st injection; this decreased to 8.1 injections per year at the time of the last follow-up. Only four patients stopped treatment at the time of the last examination.

The mean initial visual acuity was 55.6 Early Treatment Diabetic Retinopathy Study (EDTRS) letters (20/80 Snellen acuity), and the mean acuity at the 50th injection was 65.3 EDTRS letters (20/50 Snellen acuity). The mean change from baseline was 9.7 letters ($P < .001$). At the time of the 50th injection, 30 eyes (42.9%) had visual acuity of 20/40 or better. There were, however, an additional 30 eyes (42.3%) that had decreased visual acuity from baseline at the time of the 50th injection and six (8.5%) that lost three lines or more. These changes were maintained through the last follow-up examination.

Four patients (5.6%) developed foveal central-involving geographic atrophy and accounted for more than one half of the patients who lost three lines or more of vision at the final follow-up. These patients had a similar number of injections (63.7) as the rest of the patients.

Viewpoint

This was a well-designed retrospective review of long-term visual outcomes of patients with wet AMD treated with intravitreal anti-VEGF agents using a treat-extend-stop protocol.



This study contrasts with long-term data from the CATT trial,^[1] which found that 28.6% of eyes treated using a *pro re nata* (PRN, or as needed) protocol lost three or more lines of vision at 5 years. The authors postulated that recurrent exudation experienced in patients managed with a PRN protocol may cause permanent damage to photoreceptors, leading to a decrease in visual acuity.

Of note, this study showed a small number of patients with central geographic atrophy even after an average of nearly 65 injections. These authors also attributed this finding to increased episodes of retinal exudation.

It is worth noting that this study excluded patients receiving fewer than 50 injections. The rate of geographic atrophy in patients receiving fewer than 50 injections would be important to know, because these patients may have stopped therapy because they were deemed untreatable. Not including patients with at least 50 injections also may have excluded those with disciform scars or even patients who had responded well to treatment but did not require further injections.

Still, it is perhaps the longest of any study currently in the literature of its kind and highlights the positive long-term visual outcomes in patients with wet AMD using a treat-extend-stop protocol.

Abstract: <https://www.medscape.com/medline/abstract/29439828>