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EDITORIAL

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The NOD audit: Insights into the current state of management for neovascular age-related macular degeneration

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The use of vascular endothelial growth factor (VEGF) inhibitors has revolutionised the treatment of neovascular age-related macular degeneration (nAMD) since the initial registration trials more than a decade ago. The National Ophthalmology.

Database (NOD) audit, the first large scale audit of hospital eye care services for patients treated with nAMD in the UK is a tremendous effort and provides new insights to our understanding and progress made in the management of this sight threatening condition [1].

With data contributed from over 20,000 eyes from about 18,000 patients, this audit provides a snap shot of 12 month outcomes from over 75 centres throughout the UK for patients who commenced treatment for nAMD with VEGF inhibitors from 2020 to 21. The key findings can be divided into visual outcomes, care processes and safety outcomes.

The investigators found that overall, 90% of patients had stable vision, 20% experienced a ≥ 15 letter gain and 40% had good vision (defined as close to driving standard) after 1 year of treatment. The overall median VA change was a gain in 3 letters for the entire cohort. This gain is comparable to the results reported by the Fight retinal blindness registry 12 month outcome report which found a gain in 4.7 letters for patients from Australia [2]. To contextualise the perceived difference in vision gain, the baseline visual acuity from the NOD audit was higher (60 letters) as compared to the baseline VA in the FRB registry at 57 letters. The vision gain reported here is also comparatively better than other real world cohort studies which reported either a maintenance of vision from baseline or a much lower improvement over 12 months [3–5].

The driver of good vision gains appears to be the number of treatments administered. Similar to the FRB cohort, the NOD audit cohort also received a median number of 7 injections over 12 months, numerically identical to that reported in the FRB registry [2]. This is in comparison to 3–5 injections reported elsewhere [6, 7]. Increasingly, the retina community at large have recognised that good visual outcomes are to be expected with regular and adequate treatments with the findings from the NOD audit proving this.

The second key finding from this report was the time to first injection which assessed the care processes for nAMD. About a quarter of patients received their first injection within 2 weeks of referral from primary care and about half the patients received their first injection within 1 month of referral. This suggest that there are still improvements to be made in the delivery of the 1st injection in the majority of patients to meet the Royal College of Ophthalmology guidelines for first injection within 2 weeks of presentation [8]. While a majority of patients did not manage to meet the desired first treatment window, the overall median presenting visual acuity was still reasonable, at 60 letters, just at the limit of the definition of impaired vision. Compared to prior cohort studies conducted in the UK in 2014 of 55 letters [9], and 50–55 letters in the early registration trials for anti VEGF therapies [10–12], this level of presenting vision is at least 1 line better. This implies that patients are probably presenting with early symptoms as compared to previously.

Also assessed within the care process paradigm was the completion of the loading phase. Almost 70% of the patients completed their 3 loading injections within 10 weeks of the first treatment. This proportion suggests a high level of service provision and emphasis on early treatment to maximise outcomes. Taken together, early and intensive treatment has been shown to provide optimal outcomes and these measures of access care processes should continue to be tracked in this audit.

Lastly, almost 90% of patients completed the first year of treatment. This is substantially higher than that reported in other real world studies. The AURA study (2012), which reported the real world outcomes using anti VEGF therapy for nAMD in 8 countries, only showed that about 75% completed 1 year of follow up [13]. This again could be due to increased awareness of the condition as the therapy matures, patient profiles or the effective management of nAMD in the participating sites.

Several key findings are highlighted here with the NOD audit providing many more insights into the outcomes of patients treated with VEGF inhibitors for nAMD. This audit provides high quality real world evidence (RWE) in informing the effectiveness of VEGF inhibitors in clinical practice today in the UK. The results presented appear to buck the trend of prior real world reports proving that appropriate treatment delivered in clinical settings can indeed provide excellent outcomes at a large population level. This could also represent the current state of affairs with more efficacious treatments, better treatment regimens and more informed physicians and patients.

The ability to pool such high quality data is also testament to the strong partnerships and collaborative efforts between patient, physician and healthcare system. The investigators must also be applauded for the tenacity to collect and analysis this dataset of over 18,000 patients from over 70 different institutions. The continued use of this audit will facilitate the benchmarking for nAMD management for years to come as it continues to evolve and is not only useful for establishing local standards of care but also for international comparisons.

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REFERENCES

1. Norridge CG-GM, McKibbin M, Donachie P. First Annual Report of the Age-related Macular Degeneration (AMD) Audit. National Ophthalmology Database Audit, The Royal College of Ophthalmologists. 2023;2–88.

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2. Gillies MC, Walton R, Simpson JM, Arnold JJ, Guymer RH, McAllister IL, et al. Prospective audit of exudative age-related macular degeneration: 12-month outcomes in treatment-naive eyes. Investig Ophthalmol Vis Sci. 2013;54:5754–60.
3. Holz FG, Tadayoni R, Beatty S, Berger A, Cereda MG, Cortez R, et al. Multi-country real-life experience of anti-vascular endothelial growth factor therapy for wet age-related macular degeneration. Br J Ophthalmol. 2015;99:220–6.
4. Finger RP, Wiedemann P, Blumhagen F, Pohl K, Holz FG. Treatment patterns, visual acuity and quality-of-life outcomes of the WAVE study - a noninterventional study of ranibizumab treatment for neovascular age-related macular degeneration in Germany. Acta Ophthalmol. 2013;91:540–6.
5. Cohen SY, Dubois L, Tadayoni R, Fajnkuchen F, Nghiem-Buffet S, Delahaye-Mazza C, et al. Results of one-year's treatment with ranibizumab for exudative age-related macular degeneration in a clinical setting. Am J Ophthalmol. 2009;148:409–13.
6. Hjelmqvist L, Lindberg C, Kanulf P, Dahlgren H, Johansson I, Siewert A. One-year outcomes using ranibizumab for neovascular age-related macular degeneration: results of a prospective and retrospective observational multicentre study. J Ophthalmol. 2011;2011:405724.
7. Cohen SY, Mimoun G, Oubraham H, Zourdani A, Malbrel C, Quere S, et al. Changes in visual acuity in patients with wet age-related macular degeneration treated with intravitreal ranibizumab in daily clinical practice: the LUMIERE study. Retina. 2013;33:474–81.
8. Chandra S, McKibbin M, Mahmood S, Downey L, Barnes B, Sivaprasad S, et al. The Royal College of Ophthalmologists Commissioning guidelines on age macular degeneration: executive summary. Eye (Lond). 2022;36:2078–83.
9. Writing Committee for the UKA-RMDEMRUG. The neovascular age-related macular degeneration database: multicenter study of 92 976 ranibizumab injections: report 1: visual acuity. Ophthalmology. 2014;121:1092–101.
10. Rosenfeld PJ, Brown DM, Heier JS, Boyer DS, Kaiser PK, Chung CY, et al. Ranibizumab for neovascular age-related macular degeneration. N Engl J Med. 2006;355:1419–31.
11. Heier JS, Brown DM, Chong V, Korobelnik JF, Kaiser PK, Nguyen QD, et al. Intravitreal aflibercept (VEGF trap-eye) in wet age-related macular degeneration. Ophthalmology. 2012;119:2537–48.
12. Brown DM, Kaiser PK, Michels M, Soubrane G, Heier JS, Kim RY, et al. Ranibizumab versus verteporfin for neovascular age-related macular degeneration. N Engl J Med. 2006;355:1432–44.
13. Holz FG, Tadayoni R, Beatty S, Berger A, Cereda MG, Hykin P, et al. Key drivers of visual acuity gains in neovascular age-related macular degeneration in real life: findings from the AURA study. Br J Ophthalmol. 2016;100:1623–28.

AUTHOR CONTRIBUTIONS

KYCT was the sole author responsible for the conceptualisation and writing of this editorial.

COMPETING INTERESTS

The author declares no competing interests.

ADDITIONAL INFORMATION

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