South East London (SEL): Treatment Pathway for Wet Age-related Macular Degeneration (wAMD)

Approval date: Sep 2025 **Review date: Sep 2027** **(or sooner if evidence or practice changes)**

South East London Integrated Medicines Optimisation Committee (SEL IMOC). A partnership between NHS organisations in South East London Integrated Care System: NHS South East London (covering the boroughs of Bexley/Bromley/Greenwich/ Lambeth/Lewisham and Southwark) and GSTFT/KCH /SLaM/ Oxleas NHS Foundation Trusts and Lewisham & Greenwich NHS Trust

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Author	**GSTT** Consultant Ophthalmologists Highly specialised Pharmacist – Ophthalmology **KCH** Consultant Ophthalmologists Highly specialised Pharmacist – Ophthalmology **Integrated Care Board** Integrated Medicines Optimisation Team
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Note. The launch of aflibercept 2mg biosimilar preparations is awaited at time of publication of this guideline.

This document has been adapted from the national NHS England pathway for wet AMD.

NHS England (2025). Commissioning Guidance: Medical Retinal Treatment Pathway in Wet Age-Related Macular Degeneration (v1.1). Available at: https://future.nhs.uk/connect.ti/nhsbiosimilarhub/ (login required to access)

1. Abbreviations

Abbreviation	Explanation
AMD	Age-related Macular Degeneration
BCVA	Best Corrected Visual Acuity
DVLA	Driver and Vehicle Licensing Agency
ICB	Integrated Care Board
MHRA	Medicines and Healthcare Regulatory Agency
NHS	National Health Service
NICE	National Institute of Healthcare and Excellence
NG	NICE Guidance. Recommendations on the appropriate treatment and care of people with specific diseases and conditions within the NHS in England and Wales. Commissioning of medicines recommended in NICE guidance is not mandatory.
NOD	National Ophthalmology Database
OCT	Optical Coherence Tomography
RCOphth	The Royal College of Ophthalmologists
SHRM	Subretinal Hyper-reflective Material
SPC	Summary of Product Characteristics
TA	Technology Appraisal. The NHS is legally obliged to fund and resource medicines and other treatments recommended by NICE's technology appraisals
VA	Visual Acuity
VEGF	Vascular Endothelial Growth Factor
wAMD	Wet Age-related Macular Degeneration

For instances where there is an asterisk (*) present, refer to appendix 1 for the LogMAR (Logarithm of the Minimum Angle of Resolution) and Snellen equivalent.

2. Definitions

Term	Explanation
Fellow eye	The eye opposite the one being treated
Line of therapy	The order in which different therapies are given to people as their disease progresses. The following scenarios should not count as an additional line of therapy: • Switch from branded to biosimilar and vice versa, biosimilar to biosimilar switches for the same agent • Switch back to a previous anti-VEGF (i.e. those who did not experience clinical benefit after failed extended interval attempts with newer agents) • Switch due to adverse drug events or allergy Worked examples One line of therapy: • Patient switched from branded drug A to biosimilar drug A • Patient switched from drug A to B due to adverse drug events Two lines of therapy: • Patient had suboptimal response to drug A, now on drug B • Patient had suboptimal response to drug A, switched to drug B and had a good clinical response. Unable to extend dose intervals beyond 7 weeks so switched to drug C. Still unable to extend dose intervals on drug C and no clinical benefit, so switchback to drug B because it is more cost-effective. Three lines of therapy: • Patient who had suboptimal responses to drugs A and B, now on drug C • Patient had suboptimal response to drug A, then switched to drug B. Unable to extend dose intervals beyond 7 weeks on drug B so switched to drug C. Remains on drug C because has added clinical benefit compared to drug B even though unable to extend dose intervals further.
Only Eye	Only one seeing eye
Recommendations for best practice	Recommendations made by the expert working group following review of real-world evidence or based on consensus from expert working group. These are subject to local commissioning agreements.
Stopping treatment/ permanent discontinuation	A point in the patient's treatment journey where clinicians decide to stop treatment permanently. This is usually when further treatment is unlikely to benefit the patient.
Treatment harmonisation	The act of using only one drug for both eyes. Usually occurs when one eye is already on treatment, but the other eye qualifies for another treatment.
Treat and extend protocol	A standard treatment regimen for treating wAMD, where the interval for the next anti-VEGF injection is extended by 2 to 4 weeks up to a maximum of 20 weeks depending on the anti-VEGF used.
Treatment pause	A point in the patient's treatment journey where clinicians decide to temporarily withhold treatment. This is usually when the disease has become inactive whilst the patient is on a drug with maximum dose extension intervals.
Worse-seeing eye	Also known as the weaker eye. This occurs when one eye sees significantly better than the other eye.

3. Key recommendations from NHS England

- Analysis by NHS England, combining both clinical trial data and real-world evidence, shows that adopting a treat-and-extend approach as standard—**with aflibercept 2mg biosimilar**—achieves the same patient outcomes at a lower cost. This makes it the best value option and should be used first line alongside **ranibizumab biosimilar**.

- This recommendation has looked at both medicines and activity costs. Whilst NICE deems all treatment options cost effective, this is based on the proviso that all patients respond to treatment a hundred percent and the NICE TAs were not able to consider the role of biosimilars or identify the true associated activity costs.

- This treatment pathway offers a best value approach as a whole and outlines criteria that enable switching if patients don't respond fully to treatment or if they don't reach the expected dosing interval within a specific time interval. Adopting biosimilars helps unlock system-wide benefits allowing the NHS to treat patients more effectively. The savings generated from this 'biosimilar first' pathway frees up resources for reinvestment, for example to support efforts to reduce waiting lists in ophthalmology services.

- Modelling by NHS England showed no significant difference in the number of injections between treatments, especially when treatment response is good. This is evidenced by real-world data from a sample of Trusts. In other words, by using the treat and extend regimen, with aflibercept biosimilar as first line, this best value pathway will deliver the same clinical outcomes, cost significantly less, and likely have a minimal effect on capacity

4. Treatment algorithm for wAMD

If more than one treatment is suitable, use the most cost effective treatment. Use best value brand available locally in line with SEL Joint Medicines Formulary.
This guideline is based on treat-and-extend protocol, which is the preferred regime for most patients and services. It is recognised that some patients may benefit from regular treatment intervals to aid adherence.

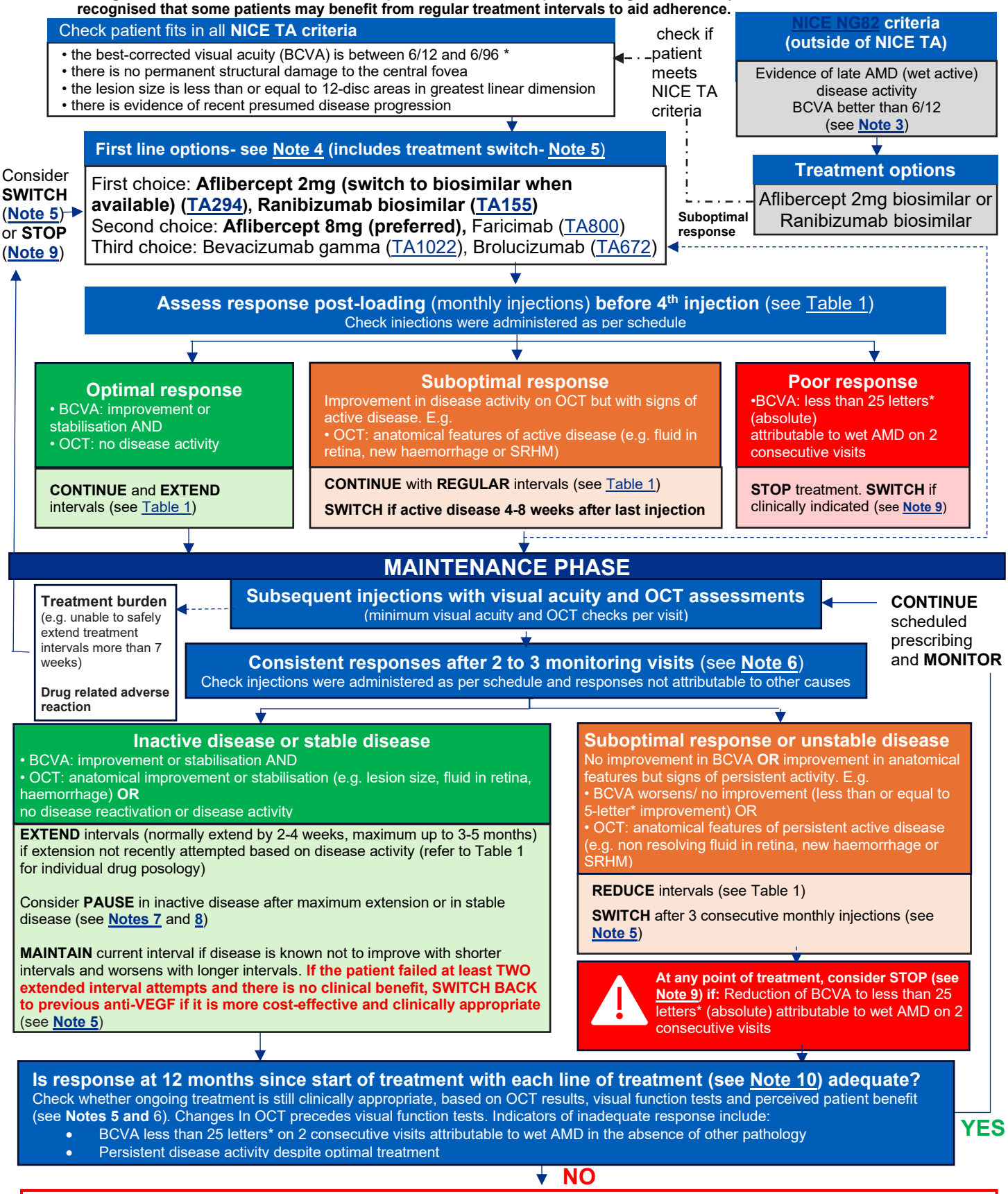

Table 1. Drug dosing details according to SPC recommendations

Drug	Cost tier	Posology post-loading		Treat-and-extend dose increment intervals	Maximum treatment intervals	Minimum dose intervals
		No disease activity	Disease activity			
First choice						
Ranibizumab biosimilar	**£**	Treat-and-extend	Continue monthly	2 weeks	12 weeks	4 weeks
Aflibercept 2mg Biosimilar once available	**£££** **£**		Continue 2-monthly	2-4 weeks	16 weeks	4 weeks
Second choice						
Aflibercept 8mg	**££**	Treat-and-extend	Clinical decision	Not specified	16 weeks, can be further extended to 24 weeks	8 weeks (max once monthly for 3 consecutive doses used in studies)
Faricimab	**£££**		Continue 8-12 weekly	4 weeks	16 weeks	4 weeks (3 weekly interval is off-label, see below)*
Third choice						
Bevacizumab	**£££**	Treat-and-extend	Continue monthly	Not specified	12 weeks	4 weeks
Brolucizumab	NE	Every 3 months	Every 2 months	Not specified	12 weeks	8 weeks

Cost tier per annum (drug and activity) based on average number of doses- **£** (cheapest), **£££** (most expensive) from NHSE modelling and real-world NHS data at the time of writing.

NE: Not evaluated by NHS England

**The minimum licensed dose interval is 4 weekly where safety and efficacy of faricimab has been studied. 3 weekly interval dosing was included in all clinical trial study protocols, to allow flexibility in dose scheduling. E.g. a patient who is meant to receive 4 weekly dosing might need to be scheduled in slightly earlier (up to 7 days) for compliance. This is why faricimab's SPC has included 3 weekly dosing in the dosing schedule. NHS England have confirmed with Roche that the efficacy and safety of faricimab in 3 weekly dosing has not been studied, therefore this is off-license. Roche was not able to confirm how many people received 3 weekly dosing during the clinical trials.*

5. Notes

Note 1: Treatment goals

For most patients, the main treatment goals are:

- Preservation of visual function (e.g. BCVA improvement or stabilisation)
- Anatomical improvement from OCT (e.g. lesion size, fluid in retina, haemorrhage) with no signs of disease activity

However, it is recognised that not all patients can achieve complete disease remission despite frequent and timely dosing due to the progressive nature of the disease.

Recommendations for best practice:

Recommendation 1. At the beginning of the treatment**,** communicate with patients at treatment initiation of all treatment possibilities at the outset. This would include:

- Expected treatment outcomes and treatment burden with patients. Use real-world data to support communication, especially those with "poor" vision.[3,4]
- Potential treatment changes throughout their journey, including the use of best value medicines when available.
- Potential for stopping treatment if there is no further clinical benefit with continued treatment.

Rationale

NOD AMD 2024 audit identified that at 12 months:[3]

- 77.7% of eyes who received treatment with "good" vision" at the start of treatment retained this level of vision. This corresponds to driving vision according to DVLA standards, provided there are no compounding factors.[5]
- Patients with "poor" vision (i.e. less than or equal to 35 letters)* at the start of treatment rarely (6.3%) achieved "good" vision.

Communicating with patients at the beginning of treatment about all treatment possibilities is crucial for setting realistic expectations. Clear communication helps patients understand the potential outcomes, benefits, and risks associated with each option, enabling them to make informed decisions about their care.

Clear communication can also help mitigate anxiety and prevent misunderstandings or disappointments later on, ensuring that patients have a clear and accurate understanding of their treatment journey from the outset.

A decision support tool for wet AMD has been developed to support shared decision-making discussions with patients and is available here: https://www.england.nhs.uk/publication/decision-support-tool-making-a-decision-about-wet-age-related-macular-degeneration/

Note 2: Service delivery by other healthcare professionals

Some SPCs (e.g. Ongavia®) mandate administration by "a qualified ophthalmologist experienced in intravitreal injections". However, in practice this may be administered by a suitably trained healthcare professional (HCP). RCOphth guidance acknowledges this and recommends that '*it is essential that the HCP always has immediate access to advice from an ophthalmologist whilst giving injections and an appropriately trained clinician is available on site to deal with any very urgent complications'*.[1]

In such circumstances, intravitreal injections performed by the HCP will be 'off-label'. Local governance processes should be in place to manage any ophthalmological or medical complications.

Note 3: Use of anti-vascular endothelial growth factor (VEGF) outside the NICE visual acuity criteria

NICE NG82 recognises the use of anti-VEGFs outside visual acuity criteria set in NICE TAs, depending on the drug and regimen used.[2]

Recommendations for best practice accepted for commissioning in South East London

Recommendation 2. Consider treating patients with "good" vision (i.e. VA more than or equal to 6/12 or more than or equal to 70 letters*). Use aflibercept 2mg biosimilars or ranibizumab biosimilars as treatment options for this cohort of patients.

Rationale:

NOD AMD 2024 audit identified that at 12 months:[3]

- 77.7% of eyes who received treatment with "good" vision" at the start of treatment retained this level of vision. This corresponds to driving vision according to DVLA standards, provided there are no compounding factors.[5]
- For patients with baseline vision of 35-55 letters* and 56-69 letters*, 19.7% and 47.1% achieve "good" vision at 12 months respectively.

It would be better value to treat “good” vision patients with biosimilars because they retain this level of vision based on the NOD AMD audit. This cohort of patients tend to respond better therefore reduce the need to switch to other more expensive therapies.
Patients who do not respond to both aflibercept 2mg biosimilars and ranibizumab biosimilars would not have the option to switch to other treatments, unless BCVA deteriorates and meets NICE TA criteria.
In South East London, this recommendation has been accepted for local commissioning. The outcomes and monitoring framework will be used to measure outcomes from this recommendation.

Note 4: Choice of therapy

If more than one treatment option is suitable and service capacity allows for timely treatment, choose the least expensive (taking into account administration costs, frequency and commercial arrangements) unless an order of preference is stated in the TAs or by the local commissioner.

Clinicians are advised to consider the patient’s medical history, existing treatment in the other eye (if receiving treatment) and patient factors. Medicines and Healthcare Regulatory Agency (MHRA) recommends brand name prescribing.[6] If more than one biosimilar brand is available, choose best value brand available locally.

Recommendations for best practice:

Recommendation 3. Where clinically appropriate, use aflibercept 2mg (switch to biosimilar once available) and ranibizumab biosimilar as first choice options.

Rationale:

- These options are the best value to the NHS (taking into account administration costs, frequency and drug cost per annum) according to NHSE modelling based on real world data and projected biosimilar savings. At the time of writing, branded aflibercept 2mg is one of the more expensive options but there are opportunity savings to be made once aflibercept 2mg biosimilars become available later in 2025.

- Examples of specific clinical considerations where aflibercept or ranibizumab may not be appropriate:
    - Non-responder to ranibizumab/ aflibercept in fellow eye previously
    - Ranibizumab-specific contraindications: subretinal bleed more than 50% of lesion, idiopathic polypoidal choroidal vasculopathy [PCV][7]

Recommendation 4. Use aflibercept 8mg and faricimab as second choice options. This is usually when high injection frequency is not acceptable with first choice options.

Rationale:

- Aflibercept 8mg and faricimab are more expensive compared to aflibercept 2mg biosimilar and ranibizumab biosimilar (taking into account administration frequency and drug cost per annum) according to NHSE modelling based on real world data. The modelling showed no significant difference in number of injections between treatments, provided there is good response to treatment. This is evidenced by real-world data from a random sample of Trusts.
- Examples where use may be appropriate:
    - Capacity constraints
- Capacity constraints are normally represented by inability within a service to deliver treatment in a timely way to patients as part of business as usual (BAU). This could be represented by frequent insourcing and outsourcing in order to meet intravitreal treatment demand.
- Providers are robustly encouraged to transform their services to create the capacity which their service demands, using some of the savings generated by first-choice agents. There are examples available where Trusts have managed their waiting lists and used transformation approaches whilst still using cost-effective treatment options.
- Within SEL, the following definition has been agreed locally: *A patient is more than 25% delayed for their scheduled injection date due to local service capacity constraints.* The total number of patients within this cohort will be regularly monitored and Trusts are actively looking to resolve these issues.

    - Patient factors
        - The following patient groups may be better managed with the least number of injections which will outweigh the cost:
            - learning difficulties
            - dementia
            - hospital transport
            - requiring treatment in the operating theatre under sedation/deep sedation/general anaesthesia
            - frequent inpatient hospital admissions or other regular attendance (e.g. chemotherapy)
    - Clinical factors
        - Non-responder to first-line choices in fellow eye previously
        - Treatment harmonisation (see recommendation 6 below)

Recommendation 5. Use brolucizumab and bevacizumab gamma (licensed) as third choice options.

Rationale:

- Bevacizumab licensed is the most expensive choice (taking into account administration frequency and drug cost per annum) according to NHSE modelling.
- Risk of intraocular inflammation with brolucizumab.

Recommendation 6. Where one eye is already on treatment, but the other eye qualifies for another treatment, prioritise treatment harmonisation by choosing the best treatment options for both eyes (i.e using only one drug for both eyes).

Rationale:

- To minimise drug administration error
- Allows easy identification of adverse drug reactions of a single drug compared to administering two different drugs.

Note 5: Consider treatment switch if:

- suboptimal response after loading phase or (post-loading) at any other point due to resistance to current agent after 3 consecutive monthly intravitreal injections[4] AND there is still potential for improvement in vision, or improved stabilisation at 6/96 or better, with further treatment
- symptoms of allergy or presumed tachyphylaxis[4]
- adverse events related to drug[1]
- frequent injections (less than 8-week intervals) required to maintain disease stability and treatment burden not acceptable to either patient or service delivery[4]
- when patient injection burden is highlighted – see page 12 for list of circumstances
- where treatment harmonisation is required (see Note 4 recommendation 2 for details)

Recommendation 7. If the patient failed at least **TWO** extended interval attempts and there is no clinical benefit, switch back to previous anti-VEGF if it is more cost-effective and clinically appropriate**.**
Consider switching to an alternative anti-VEGF if this is the patient's second anti-VEGF.

Rationale:

This is to ensure best value medicines are used appropriately in the patient's treatment journey.

When switching to a different anti-VEGF, it would be a clinical decision to determine whether reloading is required. RCOphth guidance recommends the following: [4]

Loading with new agent recommended (within product license):

- those in whom the treatment interval cannot be extended beyond 7 weeks with the current agent.

Loading with new agent may not be required (off label use):

- those managed on longer intervals (8 or more weeks) to reduce treatment burden. These patients may be switched to new agent on a matched treatment interval followed by a treat-and-extend interval post-initial dose

This approach may be easier for patients, but it is not known whether loading these patients may increase the chances of further extension so reload may also be considered.

Recommendation 8. It is recommended that a maximum of **THREE** lines of therapy should be commissioned per eye, with the expectation that the first anti-VEGF used should normally be first choice options [i.e. aflibercept 2mg (biosimilar when available) or ranibizumab biosimilar].
Subsequent lines of therapy can be second or third choice options depending on individual circumstances.

The following scenarios should not count as a line of therapy:

- Switch from branded to biosimilar and vice versa, biosimilar to biosimilar switches for the same agent
- Switch back to a previous anti-VEGF (i.e. those who did not experience clinical benefit after failed extended interval attempts with newer agents)
- Switch due to adverse drug events or allergy

Rationale:

There are no randomised controlled trials or head-to-head trials which compare the treatment outcomes for switching between different anti-VEGFs. Real-world cohort studies have shown that patients do benefit from switching to an alternative anti-VEGF. It is established clinical practice to switch to a different anti-VEGF for sub-optimal responders.[8-16]

The maximum number of treatments recommended is based on expert opinion consensus from the national working group. There are no studies which evaluate clinical efficacy when patients are switched between multiple anti-VEGFs. The upper limit aims to encourage biosimilar use, recognising the need to provide alternatives with the limited treatment options available whilst ensuring affordability for commissioners.

Note 6: Confounding factors in response assessments

Be aware that responses can be affected by other causes and may require further assessments to confirm a true suboptimal or poor response. Examples include, but not limited to:

- not consistently wearing vision correction equipment at each visual assessment
- in early dementia patients where comprehension may fluctuate at each visit
- development of cataracts (see also Note 11)

Note 7: Disease activity in the long term

Some patients will have stable disease activity or persistent subretinal fluid despite frequent and timely dosing. This is due to the progressive nature of wet AMD. Consider early review (i.e. at 2 weeks to confirm a lack of further response)

Note 8: Treatment pause

Clinicians may consider temporarily withholding treatment if:

- no disease activity [i.e. disease has become inactive on maximum extension (usually 3 to 5 months intervals depending on the drug- see Table 1 for details) after 2-3 doses]

RCOphth guidance (section 10.4) recommends monitoring with visual acuity and OCT for disease reactivation. Although there is no data on length of monitoring period required, there is consensus that patients should be monitored for at least 2 years after disease stability is achieved.[4] If there is recurrence of disease activity, treatment is reinstated until disease stabilisation is achieved, as indicated by best corrected visual acuity and/or lesion morphology.

Note 9: Stopping treatment (e.g. permanent discontinuation)

Recommendation 9. REVIEW with consideration to stop treatment if:

- visual acuity less than 25 letters* (absolute) on 2 consecutive visits despite optimum treatment (see also Note 6 and 11) AND
- attributable to wet AMD in the absence of other pathology AND
- structural results (e.g. OCT) suggest no prospect of visual improvement with continued treatment.

Questions to be considered when deciding whether further treatment is beneficial (discontinue treatment if yes to all the below):

- Has the patient completed loading phase?
- Is the patient's treatment optimised (i.e. they have been receiving adequate injections at optimal intervals on time)?
  On average, a patient initiated on treatment would require 6 injections in the first year and 5 injections in the second year. From the third year, an average of 5 injections are required to prevent decrease in vision due to inadequate treatment.[4]
- Has the patient exhausted a reasonable number of treatment options (maximum of THREE lines of anti-VEGFs are recommended)?
- Is the treated eye the WORSE seeing eye?
- Does the patient agree that they DO NOT receive continuing benefits from treatment?

Recommendation 10. Treatment STOP recommended if:

- visual acuity less than 15 letters* (absolute) on 2 consecutive visits despite optimum treatment (see also Note 6 and 11) AND
- attributable to wet AMD in the absence of other pathology

Rationale:
The above cut off points for visual acuity were based on collective expert opinion from the national expert working group.

Where a decision is made to discontinue treatment permanently where risks of giving injections outweigh its potential benefits, no further monitoring is required for that eye. These patients may be discharged from the hospital eye service (refer to RCOphth guidance section 10.5 for further information).[4]

A decision support tool for wet AMD has been developed to support shared decision-making discussions with patients and is available here: https://www.england.nhs.uk/publication/decision-support-tool-making-a-decision-about-wet-age-related-macular-degeneration/

Note 10: Initial 12-month and annual response assessments

After 12 months of intravitreal injections, most patients are expected to have:

- Stabilisation of visual function (improvement or preservation)
- Anatomical improvement from OCT (e.g. lesion size, fluid in retina, haemorrhage)

Changes in OCT precedes visual function tests.[4]

Recommendation 11. Consider treatment switch (see Note 5) or permanent discontinuation (see Note 9) if:

- BCVA less than 25 letters* on 2 consecutive visits attributable to wet AMD in the absence of other pathology (see also Note 6 and 11) OR
- Persistent disease activity despite optimal treatment

Recommendation 12. The management of the patient should be reviewed by a senior specialist annually to consider if continuation of treatment is in patient's best interest.

Note 11: Cataracts

Recommendation 13. If a patient is scheduled for a cataract operation within the next 3 months and if it is anticipated that vision will improve due to the procedure, discontinuation criteria may no longer apply, and patient may continue treatment.

6. References (NHS England guidance)

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7. Acknowledgements

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Greater Manchester ICB, Greater Manchester High-Cost Drugs Commissioning Pathway for Wet Age-related Macular Degeneration in Adults v1.1, January 2024.

South West London ICB, South West London Wet Age-related Macular Degeneration (wet AMD) Drug Pathway Version 2.0, March 2024.

London Procurement Partnership, Pan London High Cost Drugs Pathway for wet AMD Version 1, March 2025.

8. Appendix 1

LogMAR (Logarithm of the Minimum Angle of Resolution) and Snellen are both methods for measuring visual acuity. They can be used alongside or instead of letter score.

Letter Score	LogMAR Value	Snellen Equivalent
5	1.6	20/800
10	1.5	20/640
15	1.4	20/500
20	1.3	20/400
25	1.2	20/320
30	1.1	20/250
35	1.0	20/200
40	0.9	20/160
45	0.8	20/125
50	0.7	20/100
55	0.6	20/80
60	0.5	20/63
65	0.4	20/50
70	0.3	20/40
75	0.2	20/32
80	0.1	20/25
85	0.0	20/20
90	−0.1	20/15
95	−0.2	20/12

LogMAR = logarithm of the minimal angle of resolution.

Conversions Between Letter, LogMAR, and Snellen Visual Acuity Scores