Age-Related Macular Degeneration - Full Clinical Guideline

Reference no.: CG-OPHTH/2615/24

1. Introduction

The macula is the centre of the retina that is responsible for high quality central vision. Age related macular degeneration (AMD) is a chronic progressive degenerative disease of the macula typically affecting people over the age of 50 years. There are two types of advanced forms of the disease, commonly called dry and wet AMD. Whilst the dry form is a slowly deteriorating condition with no treatment at present, the wet form presents acutely and needs both urgent and chronic treatment over years.

This condition is the most common cause of visual impairment in the older population significantly affecting their quality of life and independence. Other than the cost incurred by social services, the cost of providing care for wet AMD is very high due to the cost of the drugs and the treatment burden of frequent visits to ophthalmology departments over several years. Moreover, as treatment must be initiated urgently, fast-track services need to be implemented. The demand for this service has already affected the capacity of several ophthalmology departments and is projected to rise as the ageing population increases, highlighting the need to continually plan for the chronic management and the growing need. New and existing drugs are being evaluated to reduce burden, ensure cost effectiveness, and improve outcomes. There is a need to incorporate them into these services.

People with advanced forms of AMD also require low visual aids, counselling on coping with their vision, advice on available support and have associated conditions and risk of falls that may also require treatment. Most patients with AMD are elderly, and many have other chronic diseases and mobility issues. Therefore, transport needs should be considered, and services should be readily accessible in terms of location, parking, public transport, and hours of opening. Stable treated AMD patients may be evaluated in the community. Psychological counselling regarding the loss of vision is also required. Eye Clinic Liaison Officers (ECLOs) are essential throughout a patient journey and people need the help of family/friends to attend appointments.

It is important to establish joint care with optometry services for diagnosis, referral, and monitoring of stable patients. Particularly as an ageing population increases demand upon healthcare services, pathway design must consider efficiency and cost-effectiveness of services and treatments to deliver the best possible care to patient within the resources available to the NHS. However, a patient focused approach should be the overarching principle when designing local pathways. New ways of delivering care such as telemedicine, clinical decision tools incorporating artificial intelligence and diagnostic hubs and treatment centres are to be evaluated to benefit the patients, NHS, and the wider society.

The report follows the RCOphth guidance development process and is based on best available evidence obtained from systematic review of the literature (see appendix A) and is compliant with the National Institute for Health and Care Excellence (NICE) Clinical Guideline on AMD NG82 dated 23-01-20181. NICE quality standard QS180 (standards 3 and 4) dated February 2019 has also been considered in compiling this statement2. The commissioners should refer to the cost-effective analysis in NICE NG82 Appendix J to address the cost- effectiveness of service provisions recommended in this guidance. This should consider therapy choices and pathway redesign.

There are also several initiatives that have been or are being implemented before and during the COVID-19 pandemic that needs to be considered within the scope of this commissioning guidance. In addition, evidence from research published post-NICE Clinical Guideline on AMD NG82 in 2018 are also considered. Practice will improve, evidence will emerge, and innovative technology will be developed. Therefore, this guidance will have a cyclical review to reflect continuously evolving towards current best practice.

2. Classification of AMD

There are several classification systems that describe the disease progression in AMD. The staging of severity of AMD is important because visual impairment increases with severity of AMD. The NICE guidance NG82 dated 23-01-2018 is the most recent classification of AMD. However, the frequently used terminologies to describe the various stages are based on previous classifications. Table 1 describes the NICE criteria for classification of AMD progression as set out in NICE, *Age-related macular degeneration NICE guideline* [NG82] (2018): 25-27. It is compared to the more commonly used terminology used to describe the changes.

Table 1: NICE guidelines-based classification of Age related macular degeneration[1]

AMD Classification in NICE Guidance	**Definition in NICE Guidance F**	**Frequently Used Terminology**
Normal Eyes	No signs of age-related macular degeneration (AMD) Small ('hard') drusen (less than 63 micrometres) only	No AMD
Early AMD	Low risk of progression: medium drusen (63 micrometres or more and less than 125micrometres) or pigmentary abnormalities Medium risk of progression: large drusen (125micrometres or more)/reticular drusen/medium drusen with pigmentary abnormalities	Early AMD or Age-related maculopathy Intermediate AMD

	<u>High risk of progression</u>: large drusen (125 micrometres or more) with pigmentary abnormalities/reticular drusen with pigmentary abnormalities/vitelliform lesion without significant visual loss (best-corrected acuity better than 6/18)/atrophy smaller than 175 micrometres and not involving the fovea	
Late AMD (indeterminate)	Retinal pigment epithelial (RPE) degeneration and dysfunction (presence of degenerative AMD changes with subretinal or intraretinal fluid in the absence of detectable neovascularisation) Serous pigment epithelial detachment (PED) without neovascularisation	
Late AMD (wet active)	Classic choroidal neovascularisation (CNV) – Type 2 Occult (fibrovascular PED & serous PED with neovascularisation – Type 1 Mixed (predominantly or minimally classic CNV with occult CNV) Retinal angiomatous proliferation (RAP) – Type 3 Polypoidal choroidal vasculopathy (PCV)	Neovascular AMD (nAMD) or wet AMD
Late AMD (dry)	Geographic atrophy (in the absence of neovascular AMD) Significant visual loss (6/18 or worse) associated with: dense or confluent drusen/ advanced pigmentary changes and/or atrophy/ vitelliform lesion	Advanced dry AMD / Geographic atrophy
Late AMD (wet inactive)	Fibrous scar Sub foveal atrophy or fibrosis secondary to an RPE tear Atrophy (absence or thinning of RPE and/or retina) Cystic degeneration (persistent intraretinal fluid or tubulations unresponsive to treatment) NB Eyes may still develop or have a recurrence of late AMD (wet active)	Advanced wet AMD/ Disciform scar
Do not refer to late AMD (wet inactive) as 'dry AMD'.		

3. Epidemiology of AMD

3.1 Prevalence of AMD in the UK

In 2012, it was estimated that there were 513K cases of late AMD, 276,000 cases of geographic atrophy, and 263,000 cases of neovascular AMD in the UK. When these figures are applied to updated 5 yearly population estimates for the UK, published by the United Nations for males and females combined, for years 2020 and 2050, the prevalence in 2020 is estimated to be 645,000 cases of late AMD, 354,000 cases of geographic atrophy and 339,000 cases of neovascular AMD. In 2050, these figures are projected to increase to 1.3 million late AMD, 720,000 geographic atrophy and 683,000 neovascular AMD (Personal communication with Dr Alicja R Rudnicka and Professor Christopher G Owen).

3.2 Prevalence of visual impairment in the UK due to AMD

In 2013, it was estimated that 1.93 (95% CI 1.58 to 2.31) million people had MSVI and blindness in the UK, representing 3.0% (2.5% to 3.6%) of the population[14]. This included about 255,000 (208,100 to 304,800), or 13.2% who are severely sight impaired (blind). From 2013 to 2050, sight loss and blindness from AMD is projected to increase from 23.1% to 29.7%, more than doubling from 445,809 (363,900 to 532,800) people to 1.23 (1.01 to 1.47) million people. Analysis of certificates of visual impairment (CVI) show that approximately 50% of people registered sight-impaired or severely sight-impaired are due to degeneration of the macula and posterior pole.

3.3 Incidence of AMD in the UK

Based on the estimations made in 2012 from the 2007-2009 UK population data, the annual incidence per year of new cases of late AMD was 71 000, equating to 4.1 cases per 1000 women and 2.6 per 1000 men. The incidence of geographic atrophy was 44,000, that is 2.4 per 1000 women and 1.7 per 1000 men. For nAMD, these figures were 40,000 that equates to 2.3 per 1000 women and 1.4 per 1000 men 5 yearly population estimates for the UK, published by the United Nations for males and females combined, for years 2020 and 2050, the incidence in 2020 is estimated to be 83,000 cases of late AMD, 51,000 cases of geographic atrophy and 46,000 cases of neovascular AMD. In 2050, these figures are projected to increase to 157,000 late AMD, 97,000 geographic atrophy and 88,000 neovascular AMD (Personal communication with Dr Alicja R Rudnicka and Professor Christopher G Owen). Increasing age, white ethnicity and smokers are risk factors that affect the incidence of AMD.

3.4 Cost of visual impairment and treatment

The Time to Focus report by Fight for Sight in 2020 revealed that the annual societal costs of AMD related visual impairment is £2.6 billion, of which 47% of costs fall within the health and social care sector. The estimated costs include £1.2billion on healthcare; £0.036 billion on devices; £0.14 billion

on productivity; £0.002 billion on welfare; £0.5 billion on informal care and £0.69 billion on intangible costs. It was also estimated that more than 11,000 new cases of late AMD already have at least moderate visual impairment. Overall, the total lifetime costs for this cohort were estimated at almost £818 million with an average cost per patient of £73,350.

Total lifetime costs of the cohort of cases with late AMD in the context of the NHS budget over the same period and growth in spending needs to be factored in service provision. Costs have significantly increased since the introduction of the new Wet AMD treatments: since receiving funding direction from NICE in 2008/09, new Wet AMD drugs costs have increased from 0% to 2.74% of the total NHS drugs budget and by 2016/17 both featured in the top five highest cost items in the NHS drugs budget (across both hospital and primary care). Over the same period (since 2009/10), the NHS budget has received year on year funding increases of approximately 1.2%.

4. Risk factors for development and progression of AMD

The risks include both modifiable and non-modifiable risk factors. This includes all stages of AMD.

4.1 **Non-modifiable** risk factors	
Increasing drusen area and volume	Patients with a drusen volume over 0.03 mm3 in the 3mm circle of the macula centred at the fovea has a greater than 4-fold increased risk for developing late AMD compared with those with lower drusen volumes.
Subretinal Drusenoid Deposits (SDD)	Subretinal Drusenoid Deposits (also known as reticular pseudodrusen) are an independent risk factor for AMD development progression.
Genetics	Although 52 genetic variants have been identified for AMD, almost 15% of patients with AMD have no risk variants. Additionally, no genetic score has been defined to assess risk for AMD.
Fellow eye of wet AMD eyes	There is a 10% per year risk of developing wet AMD in the fellow eyes in people with unilateral wet AMD.

4.2 **Modifiable risk** factors for progression to more advance forms of AMD	
Smoking history	Smoking is an established strong modifiable risk factor for AMD. Being a current smoker quadruples the risk of progression to late AMD. A synergistic effect has been documented between smoking and genetic factors . Current smokers develop late wet AMD at an average of 5.5 years younger than those who never smoked and 4.4. years younger than past smokers . The risk of AMD goes back to that of a non-smoker with 10 years of quitting, therefore smoking cessation should be recommended to these patients.

Body Mass Index	A higher body mass index (BMI) (>30) increases the risk for progression to advanced AMD (RR 2.35). A wider waist circumference is associated with a two-fold increased risk for progression. There is a direct association with higher BMI leading to higher risk of AMD.
Nutrition	A diet low in omega-3 and -6 fatty acids, antioxidant vitamins, carotenoids and minerals are a risk factors for AMD. Adherence to a Mediterranean diet is associated with a 41% reduced risk of incident late AMD. The effect is due to the increased consumption of fruits and diet rich in antioxidants that aid in prevention of AMD. A diet of 200 grams per day of vegetables, fruit two times per day, and fish two times per week is associated with a significantly reduced risk of AMD. The original Age-Related Eye Disease Study (AREDS) showed that supplements containing vitamin C, vitamin E, beta carotene, and zinc reduced the 5-year likelihood of developing late AMD by an estimated 25% in at risk individuals. These individuals were those with bilateral large drusen or fellow eyes with large drusen with late AMD in the first eye. The primary analysis of Age-Related Eye Disease Study 2 (AREDS 2) showed no additional value of adding lutein and Zeaxanthin, omega-3 long-chain polyunsaturated acid or the combination on the progression to advanced AMD or changes in visual acuity compared with placebo. However, secondary exploratory analyses suggest that due to the risk in smokers lutein/zeaxanthin is more appropriate than beta carotene in the AREDS supplementation[36]. These supplements may be obtained over the counter; and is an item not routinely prescribed in primary care (NHS England, *Items which should not be routinely prescribed in primary care: Guidance for CCGs* (2019).
Sunlight exposure	Meta-analysis on the association between sunlight exposure and AMD indicated no relationship between exposure to sunlight and increased risk of AMD[37].

5. Associations of AMD

Systemic comorbidities in patients with AMD may present a challenge for on-going care of this long-term condition due to difficulties in accessing care and maintaining compliance. Key co-morbidities include hearing loss, poorer cognitive function, established dementia, Alzheimer's disease, depression, and anxiety related to both the diagnosis and therapy for AMD.

Charles Bonnet syndrome (CBS) may be a secondary effect of AMD. It affects visually impaired patients, characterized by the occurrence of chronic visual hallucinations, not attributable to other neurologic causes such as Alzheimer's disease, or use of drugs and the patients are aware of the unreality of these images[40]. The prevalence of CBS in nAMD patients ranges from 11% to as high as 40% and mainly affects older individuals with poor visual acuity. It is useful to make this condition

known to all patients with visual impairment. Misdiagnosis in patients with mental health issues is also a concern.

6. Diagnostic modalities of AMD

6.1 Clinical Examination

Clinical examination should include recording symptoms of AMD, smoking and family history, visual acuity assessment, fundoscopy, and examination of both eyes. Visual acuity should ideally be measured using a LogMAR chart and recorded in Early Treatment Diabetic Retinopathy Study (ETDRS) letters for all cases of AMD and in all cases of nAMD initiated on treatment. Snellen visual acuity is acceptable if ETDRS is not available during the first consultation, however conversion of Snellen visual acuity to LogMar should be avoided due to high level of inaccuracy.

6.2 Optical Coherence Tomography (OCT)

OCT is the first diagnostic test for patients with AMD. OCT is a non-invasive test that provides information on the structure of the retina. OCT has high sensitivity and specificity in detecting late AMD. In the indeterminate form of late AMD, it may identify subretinal or intraretinal fluid or serous pigment epithelial detachment (PED) without detectable choroidal neovascularisation. These cases require regular monitoring with multimodal imaging as they are at increased risk of developing late nAMD. OCT should be acquired in both eyes. Fellow eyes of unilateral nAMD patients under treatment are at risk of conversion to nAMD and the progression of disease is best captured on OCT as patients may be asymptomatic at point of conversion. OCT is also the most sensitive tool to assess response to treatment including reactivation of disease.

6.3 Optical coherence tomography –angiography (OCT-A)

OCT-A has recently become more widely accepted as a rapid, sensitive, and non-invasive imaging test used for detection and management of nAMD. When the structural OCT shows features suggestive of the nAMD, evidence of choroidal neovascularisation on OCT-A is considered adequate evidence to initiate therapy. However, the technique requires high specification computers for data storage, analysis, and expert interpretation of scans due to presence of artefacts (such as motion, blink, and projection). A negative OCT-A scan however does not exclude the diagnosis of CNV. In such cases, when the structural OCT suggests the nAMD, but OCT-A imaging does not confirm the presence of CNV, invasive tests may need to be performed to confirm nAMD. Fundus fluorescein angiography (FFA) is the recommended invasive test but indocyanine angiography (ICG) may add value to the interpretation especially when there is a suspicion of polypoidal choroidal vasculopathy.

6.4 Fundus Fluorescein Angiography (FFA)

Traditionally the diagnosis of nAMD was made using FFA. With the advent of structural OCT and OCT-A, FFA is less widely used for clinical diagnosis at present. However, FFA is a useful tool that aids in accurate diagnosis in indeterminate cases. FFA in combination with ICG is indicated specifically in

cases with equivocal scans on OCT-A, partial or poor responders to anti-VEGF therapy and in patients where any other retinal signs might be confounders.

6.5 Indocyanine green angiography (ICGA)

Further confirmation of diagnosis with ICGA may be required at baseline or at some point in the pathway to confirm the diagnosis of polypoidal vasculopathy, retinal angiomatous proliferation and to re-evaluate the diagnosis mainly in poor or non-responders. For this procedure there should be a senior ophthalmologist/consultant guiding the decision. Centres that do not have ICGA facility may need to refer to other centres with this facility.

6.6 Recommendations

1. The order of examination is shown above and most diagnosis can be made by clinical examination, OCT and OCTA.
2. OCT can be employed as sole investigation to detect nAMD in rare scenarios: -when there is no ready access to confirmatory tests such as OCTA or FFA to avoid delay in receiving first treatment within 2 weeks of the diagnosis or due to patient factors such as difficulty in obtaining informed consent, allergy to fluorescein dye contraindicating FFA or inconclusive OCTA and/or FFA.
3. FFA in combination with ICG is indicated specifically in cases with equivocal scans on OCT-A, partial or poor responders to anti-VEGF therapy and in patients where any other retinal signs might be confounders.
4. Centres that do not have ICG facility may need to refer to those with services.

7. Care Pathway

7. 1 General Recommendations for all AMD patients

a) Advice on smoking cessation services and the information on it must be made available to patients by local services.

b) Nutrition and supplements – A healthy diet, rich in fresh fruit, vegetables, eggs, and oily fish is recommended. Licensed formulations of multivitamin supplements containing the AREDS2 formulation are not available on prescription within the NHS. Patients may choose to source these over-the-counter supplements independently. The original AREDS formulation consisting of vitamins C, E, beta- carotene, and zinc reduced the 5-year risk of developing late AMD in persons at risk by an estimated 25%. These include those with either bilateral large drusen or large drusen in one eye and late AMD in the fellow eye. However, further research is required to evaluate Its role in early AMD.

c) Genetic screening is not recommended

d) Need for low vision aids should be assessed in those who meet the definition of low vision at any point throughout the patient journey. The definition of 'lownvision' applies when a person's vision affects their daily lives and cannot be improved with spectacles or contact lenses.

e) Prescription for health –All eye care professionals including ophthalmologists, ECLO, ophthalmic nurses and GPs support is required to promote health-seeking behaviour, physical activity and signposting to other services where range of support is available from the third sector.

f) Screening of fellow eyes - Monitoring of fellow eyes with OCT should be done while the affected eye is undergoing treatment or is being monitored (NICE Quality Standard QS180) The evidence on monitoring of fellow eyes once the patient is discharged from the service is limited and continues to remain an unmet research need.

g) Whilst patients are undergoing treatment or are being monitored, continued attendance at their regular optometrist should be encouraged. This allows early identification of co-morbidities and correction of refractive errors.

h) When patients are discharged to primary care for ongoing monitoring it is essential that they are discharged with a report of the last findings at discharge, through communication between practitioners is essential to ensure patients receive safe and appropriate care.

7.2 Early AMD

The population with early AMD at any risk of progression may be diagnosed and managed by primary care optometrists working in the community as part of their routine practice. As minimal pre-requisites, diagnosis should be based on history, symptoms, visual acuity assessment and fundus assessment. OCT can be helpful if available. In suspected cases of wet AMD, the patients must be referred to secondary eye care if suspicion is high. If diagnosis is uncertain in an eye with suspected nAMD, the patient can be referred to primary care/community eye service or diagnostic hub with OCT facilities within one day. Discussion with HES/HES virtual review of images may be required to determine action to be taken.

7.2.1 Recommendations for early AMD

1. If confirmed as early AMD within secondary care, patients can be discharged and advised to have regular sight tests with their primary care optometrist. General ophthalmic services (GOS) only funds sight tests every 2 years. It is imperative that the primary care optometrist is kept updated of the diagnosis and management. This will allow for improved referrals and lower likelihood of unnecessary re-referrals.
2. Self-monitoring with Amsler chart is often recommended but has very low sensitivity. Patients need to report if they notice distortion, sudden drop in vision or scotoma in central visual field. However, the diagnostic accuracy of Amsler chart or self-reported change in visual function is inferior to OCT screening. Any move towards routine OCT monitoring would require additional infrastructure and resources. However, it is the most accurate monitoring test. For example, in Wales, there is already a pathway for the assessment of sudden change in vision. Majority of optical practices already have OCTs, and health boards

are moving to either remote triage (Consultant Connect) or Optometric Diagnostic and Treatment Centres type assessment centres (Newport Friars Walk). Home monitoring devices utilising visual function changes are being evaluated. However, further evidence is required in light of the fact that none of the visual function tests are as sensitive as OCT.

7.3 Late dry AMD (Geographic Atrophy)

Currently, there are no treatment options for this condition.

7.3.1 Recommendations for Late dry AMD

1. General recommendations for AMD patients apply (see section 7.1).
2. If patients with late dry AMD develop nAMD (wet active), they should be treated as late nAMD (wet active) unless there is no potential for visual improvement.
3. Depending on the visual acuity of both eyes, consider refraction, low visual aids or CVI and providing information on DVLA standards for driving eligibility.
4. Ophthalmic nursing support, trained health care professionals (HCP) and ECLO services are highly recommended as they play a useful, key role in terms of supporting, providing education, and making appropriate MDT and/or third sector referrals for these patients.
5. Optometrists and Dispensing Opticians in primary care practice are also able provide these support services, if commissioned.
6. Considerable support is provided by third sector and cover both visual and psychological challenges faced by individuals with this condition including those with Charles Bonnet Syndrome.
7. They may be discharged from secondary care to be monitored by local optometrists for routine sight tests and patient self-management.

7.4 Late wet AMD (neovascular AMD /nAMD)

7.4.1 Population to whom care pathway applies

This population is defined as the group of patients with nAMD in one or both eyes who will be at risk of rapid decline in vision in the affected eye, if not treated promptly and efficiently. Early diagnosis, prompt referral and protocol-based treatment help to stabilise visual function in the majority of cases. However, the main issue faced by providers is a lack of adequate capacity in the face of increasing numbers of affected patients (due to increasing age of the population) who need prompt initiation of treatment and ongoing therapy over several years. For commissioners, the increasing cost of ongoing therapy is a growing concern.

7.4.2 Referral from initial referring source

Patient suspected with nAMD must be directly referred within 1 working day to an NHS commissioned specialist AMD service (i.e service under the oversight of a medical retina specialist) if suspicion is high1. If diagnosis is uncertain in an eye with suspected nAMD, the patient can be referred to primary care/community eye service or diagnostic hub with OCT facilities within one day. Discussion with HES/HES virtual review of images may be required to determine action to be taken1.

Whichever route is followed the time from suspicion to treatment must be no longer than two weeks. There needs to be a dedicated robust rapid access referral system, either via direct referral to the HES (face to face or virtual clinics) or via a referral refinement system through primary care optometrists (optometrist decision maker or virtual opinion by HES on the optometrist collected data may be an option).

The minimum standards of the referral letter from optometrists should include history and symptoms, visual acuity and fundoscopy findings. OCT is becoming more widely available in primary care and commissioners should work with providers to agree a clear pathway to include electronic direct referral, allow sharing the full volumetric OCT where available to avoid duplication of care.

The delivery of more specialised eye health services by, or in partnership with community optometry will increase patient choice and improve access in terms of location and time with many community optometrists offering extended days and 7-day services. Delivering services in a community setting will help some patients to normalise the management of their eye health issues and participate in self-care and proactive monitoring and management in the course of their regular activities in the community. The shared care model and integrated pathways will also support improved collaboration between primary care, community optometry and specialist services. Shared training and development will result in improvements in the quality of referrals and patient outcomes.

7.4.3 Sources of referral

- Primary care Optometrists refers directly to the commissioned rapid access clinics.
- Referral from other ophthalmologists/emergency services. Referral from GP should have history and symptoms indicating a suspicion of nAMD as a minimum. Optional referral to optometrists may be made first for diagnostic confirmation of nAMD prior to referral to rapid access clinic but this should not delay treatment.
- Self-referral to eye casualty: patients may notice distortion or central visual impairment and these patients should be fast-tracked for OCT evaluation to rule out nAMD.
- Referral from diabetic retinopathy services should have minimum standards of colour fundus photograph findings and visual acuity record.
- Telemedicine and virtual retinal clinics run in HES may diagnose nAMD by reviewing visual acuity, OCT +/-colour fundus photograph.
- Monitoring of second eye must be done at all visits while the first eye is being treated or monitored by OCT. Asymptomatic fellow eyes with active disease defined as new macular haemorrhage and/or OCT features of nAMD should be referred for treatment.

7.4.4 Method of referral

1. Referral methods may include a dedicated phone line for urgent referrals, or a secure email service approved for information transfer of clinical information. If the option is available and compatible with local rapid access services, eRS helps optimise dialogue and feedback. Images may also be sent by email however a single OCT scan as part of an imaging dataset may not be adequate to prioritise timely review.

7.4.5 Booking of referrals in Hospital Eye Service

1. Dedicated referral route – a fast track or rapid access assessment service should be available for these patients.
2. Direct booking by administrative team into the Rapid Access clinic or virtual clinic as soon as the patient presents.
3. If nAMD is suspected, a rapid access route for evaluation and treatment needs to be available. These clinics may be face-to-face or virtual and provided by medical staff or allied health professionals, under the supervision of a medical retina consultant.

7.4.6 Assessment within Rapid Access Clinic in HES

Minimum standards to be met:

1. Medical retina consultant led service providing governance structure.
2. History and symptoms: medical history should include medication and allergies.
3. Visual acuity assessment preferably in ETDRS letters
4. Imaging: OCT for initial assessment. If clinical examination and OCT confirms no nAMD, the pathway stops, and patients may be discharged back to optometrists.
5. OCT findings confirmed by OCT-A and/or FFA/ICG if OCT shows signs of nAMD.
6. Assessment and offer of treatment within 2 weeks of date of referral after discussing the pros and cons of the treatment regimen.

7.4.7 Referral refinement of Rapid Access

Referral refinement for rapid access requires an OCT as standard. OCT is becoming more widely available in primary care and commissioners should work with providers to agree a clear pathway to include electronic direct referral, allow sharing the full volumetric OCT where available and so avoid duplication of care.

Until OCT scanning is commissioned consistently, referral for OCT and further diagnostics is to be expected. Not all primary care optometrists have access to OCT scanning so in cases with a lower suspicion of wet AMD but a need to rule this out with OCT, triaging or referral refinement approach may therefore be an effective way of managing the demand on the service.

Methods include:

- Tele-ophthalmology where visual acuity and OCT images may be sent to the HES for further grading and refinement. There is emerging evidence on the effectiveness of teleophthalmology, however its application to the service would require additional IT support and infrastructure.
- HES governed virtual clinics where health care professionals document the visual acuity and obtain OCT images of both eyes for grading by retina trained HCP delegated to manage this clinic under the guidance of retinal specialists.
- Traditional HES Face to face retinal clinic where decision is made on the outcome of the referral by medical or non-medical trained HCP.
- Services for referral refinement should be developed with device agnosticism so that all primary care providers are able to feed into the service.

7.4.8 Referral Outcomes

1. Outcome is no AMD: Discharge
2. Outcome is early AMD: Follow recommendation for AMD in section 7.2.1.
3. Outcome is late indeterminate AMD: Monitoring with visual acuity and OCT assessment; treatment initiated if nAMD is confirmed
4. Outcome nAMD present and symptomatic presenting VA better 6/96 or better: Follow recommendation for anti-VEGF in nAMD in section 9.
5. Outcome nAMD with or without disciform scar and poor visual potential (presenting visual acuity Snellen 6/96 or worse or ETDRS letters less than 25 letters): Clinicians' discretion to initiate treatment or monitor. NICE guidance advises to only consider treatment if the patient's visual function could improve e.g., if the better seeing eye is affected. Discharge if no treatment is expected.
6. Outcome is geographic atrophy (Late dry AMD): Discharge and recommendations see section 7.3.1
7. Outcome non-AMD causes of fluid at macula: Referral to Medical or Surgical Retina Service for diagnosis confirmation and appropriate treatment.
8. Other pathology: refer to subspecialty depending on pathology identified.
9. Feedback on referral to be sent to the referrer and copied to the GP.

8. Pharmacological management of nAMD (late wet active AMD)

8.1 Anti- VEGF therapy

The currently available anti-VEGF agents are ranibizumab, aflibercept 2mg and 8mg, Faricimab, brolucizumab and bevacizumab. Ranibizumab, aflibercept 2mg and 8mg, Faricimab and brolucizumab are licensed for this indication and recommended by NICE. Brolucizumab is approved by European Medicines Agency and was approved by NICE on 3rd February 2021. Faricimab is approved by NICE (Technology appraisal guidance Reference number:TA800) in 2022.

Similarly, anti-VEGF biosimilars are also being evaluated at present. These will be less costly than currently licensed agents. The availability of a licensed Ranibizumab biosimilar if found to be of similar clinical effectiveness to current licensed anti-VEGF agents. Ranibizumab biosimilar (Ongavia) is used in UHDB since 2023.

8.1.1 Relative merits of the available anti-VEGF drugs

Explained as above are the different anti-Vegf approved by NICE in use of WET AMD in UK. The posology and the real-world clinical data of each drug varies. Adherence to a posology allowing earlier and longer extension may offer some benefits in terms of capacity required for appointments and treatment burden. The choice of first line agent may be further guided by service setup, capacity, locally agreed costs, and results of local audit of results of treatment.

8.2 Non-pharmacological agents

There is no evidence that any form of photo biomodulation using any wavelength is effective for any stages of AMD. There is also no evidence of the benefits of applying laser for drusen disappearance or for treating sub foveal choroidal neovascularisation. There is limited evidence to date on the role of radiotherapy for nAMD. Results of the STAR study that is evaluating the role of stereotactic radiotherapy in reducing the number of pro re nata ranibizumab injections required during the first 24 months are awaited.

9. High-value management pathway for nAMD

Given the large number of follow-up examinations and treatment required for the significant and increasing number of people with nAMD, a high value care pathway will need to include medical and other suitably trained and experienced non-medical HCPs in the hospital, and primary care optometry settings. A significant number of injections are provided by HCPs especially nurses. Development of current and future services necessitates identifying the population eye health needs, capacity, and demand tools, use of electronic medical records, robust information technology (IT) support with secure clinical data and communication systems and strong infrastructure across the system.

Some patients may also have good visual acuity in the early stages of nAMD and these patients are likely to have a better than average long-term prognosis if treated early. So, close monitoring is recommended.

9.1 Initiation of anti-VEGF therapy

Patients should be provided sufficient information to assist them to reach an informed decision about anti-VEGF therapy and to give informed consent.

9.1.1 Information and Consent

1. The patient information specified in NICE guidelines should be explained to the patient by all healthcare professionals involved in the care of the patients and opportunities should be provided to discuss all aspects of the AMD pathway.

Topics to be covered include:

- what is AMD and its prevalence; types of AMD;
- causes of AMD; smoking cessation and other lifestyle advice;
- progression and complications of AMD;
- the possibility of developing visual hallucinations associated with retinal dysfunction (CBS) including signposting support services;
- vision standards for driving; required tests and investigations;
- treatment options, including possible benefits and risks;
- the importance of probable repeated injections should be discussed; the likely frequency at which these will be required, and long-term nature of therapy.

- who to contact for practical and emotional support including signposting third sector organisations;
- where the person's appointments will take place;
- which healthcare professionals will be responsible for the person's care;
- expected wait times for consultations, investigations and treatments and transport requirements;
- treatment options and licensing status;
- the benefits and entitlements for CVI when sight impaired or severely sight impaired;
- when, where and how to seek help with vision changes;
- consideration should be given to the needs of family and care givers.

Time should be allocated to discuss the patient's concerns about their diagnosis, treatment, long term nature of treatment and prospects for their vision. Ophthalmic nurses and ECLO are well-placed to identify and respond to the patient's emotional needs and refer as appropriate for support. Covering these topics is a lot for patients to take in under what may be a stressful situation for the patients. Provision should be made to enable patients to return to the HES or contact the HES via telephone, email etc to gather more information and with questions when they are ready and able to process the information.

The information provided in writing is subject to the NHS Accessible information Standard, so the information needs to be available in a format accessible to the individual patient.

2. Pre-injection consultation should cover the following aspects: the importance of treatment; the treatment options, differences in terms of burden and durability of each option; why the intravitreal (IVT) procedure is appropriate for the patient; what the treatment involves/what to expect/what the risks are; who is likely to give the injection; risks to vision if patient non-compliant with treatment advice. Patient should be given sufficient information to make an informed choice based on a patient and clinician discussion. Potentially serious risks quoted in relation to IVT should include endophthalmitis, retinal detachment, vitreous haemorrhage, central retinal artery occlusion and cataract. Additional risks should be explained for specific products e.g., anti VEGF therapy and the theoretical risk of thrombo- embolic events, floaters may occur following IVT.
3. The information should be provided in accessible formats for people with AMD at their first appointment, and then offered again on return to clinic or whenever asked for. The information should cover the information about AMD and treatment pathways, including likely timescales, key contact details; advice about what to do and where to go if vision deteriorates; available support (including transport and parking permits); links to local and national support groups.
4. Patient's priorities should be assessed when making management decisions. ECLO support as a supplementary role to assess patient's situation holistically.
5. Additional peer support often facilitated by third sector organisations should be promoted particularly for people who are beginning intravitreal injections, as they may feel reassured by discussion with someone who has previously had the same treatment. Third sector organisations also provide expert advice free and professional emotional support services (counselling).

6. Valid consent must be obtained from the patient prior to first IVT procedure; this will normally suffice for a series of treatments over several months when the drug is licensed for IVT. If consent is taken in advance, before every injection the patient must be asked about any changes to their medical condition and consent should be briefly re-confirmed. The information provided

in writing is subject to the NHS Accessible information Standard, so the information needs to be available in a format accessible to the individual patient.

7. Repeat written consent to be taken in the following scenarios:

    - If there is a change to the treatment plan; drug used; the clinical condition and/or the perceived benefit/risk to the patient.

    - If the drug used is unlicensed for this condition.

9.1.2 Recommendations on initiation of treatment

1. Offer treatment within 2 weeks of referral (an audit standard for AMD service). Treatment on same day of diagnosis is an option especially if the better-seeing eye is affected.
2. Minimum standards to be met: visual acuity recorded in ETDRS letters and utilising OCT to diagnose and treat patients. Treatment is recommended in patients with a visual acuity of 6/96 (log MAR 1.20, 25 ETDRS letters) or higher. In patients with advanced disease, specialist assessment is required of the degree of structural damage and potential benefit from treatment especially if the patient has excellent vision in the unaffected eye and is unlikely to gain functional benefit. In patients with visual acuity worse than 6/96, treatment may be considered only if it is the only functional or better seeing eye.
3. Initiate anti VEGF therapy: Mandatory loading dose monthly for 3 injections.
4. Monitoring of fellow eyes: Fellow eyes should be monitored with OCT while the patient is being treated or monitored for unilateral nAMD. However, there is an unmet need to explore continued access to regular OCT monitoring for patients who have been discharged from HES.

9.2 Medicines Management section

Liaise closely with your local pharmacy department to ensure that an adequate supply is maintained. Recognise that obtaining a timely supply is balanced against ensuring that relevant patient information is collated to enable adequate payment. This may include but is not limited to keeping the relevant medication as stock and using an electronic record, implementing an automated dispensing system, investing in the pharmacy team to help manage supplies.

9.3 Treatment regimen

1. A loading phase of 3 injections is recommended irrespective of the anti-VEGF used.
2. A treat and extend regimen based on visual acuity and OCT is recommended.
3. Extend by 2 – 4 weeks to a maximum of 12-16 weeks based on disease activity and drug posology.
4. Option to monitor and extend if dry macula after maximum extension is reached and maintained at this interval for a further 2-3 visits. Patients may be kept on OCT monitoring which may be most efficient within virtual review clinics within HES or the community depending on local infrastructure.

5. nAMD is a lifelong disease and approximately 40% can reactivate and so the patients can very rarely be discharged from monitoring unless disease has been stable without requiring injections for at least two years.

9.4 Stability

Stable disease is defined clinically as 2-3 visits at maximal extension based on posology of the drug used (12 or 16 weeks) with dry retina and stable VA. However, this is subject to clinician discretion and varies with individual patient. After a treatment free monitoring interval of 12 months 34% of patients will still reactivate and need to restart treatment in the subsequent 12 months of further monitoring. Self-monitoring using Amsler chart is not a sensitive tool. Home monitoring devices utilising visual function are not validated in the NHS yet. We await the results of the MONARCH study to explore whether such devices are feasible for this age-group[67]. Meanwhile, OCT is the only sensitive monitoring tool for assessing reactivation. Monitoring of stable patients:

1. Monitoring must be done with visual acuity and OCT: These may be done in virtual clinics or face to face clinic. 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 stability is achieved. Monitoring with visual acuity assessment or visual function devices alone is not appropriate. Changes in OCT precede visual function tests.
2. Monitoring using visual acuity and OCT may be done closer to home by optometrists to avoid burden on hospitals, but the optometrists will need access to training to identify reactivation if they do not have the relevant higher qualification. Community follow-up of these by trained optometrists with medical retina Consultant-led governance supported by fast-track referral to hospital, ophthalmology advice and guidance will enable quality assured joined up care to increase overall capacity. However, these monitoring provisions in community would require OCT and a pathway re-design.
3. There is insufficient evidence at the current time to implement monitoring using artificial intelligence.
4. If reactivation occurs, re-treatment should be initiated as soon as possible on pro re nata or a treat and extend protocol or re-initiate on loading dose until stability criteria is met. The choice of treatment regimen is based on clinician discretion and individualised per patient as currently, there is no robust evidence comparing these approaches in treating re-activation.

9.5 Treatment discontinuation

The NICE guidelines indicate that it was appropriate to stop anti-VEGF treatment if an eye met the defined criteria of late AMD wet inactive (defined in section 3, Table 1), and/or if it was determined that there was no prospect of visual improvement as a result of continued treatment. Inefficient treatment, for example provided too infrequently, might cause a loss in visual acuity that leads to treatment discontinuation. However, treatment should be given as recommended in the guideline prior to determining whether it should be discontinued. These patients may be discharged from the HES. Fellow eyes of those eyes that have discontinued treatment due to wet inactive disease would be discharged from HES.

Premature treatment discontinuation and inefficient treatment are important causes of visual loss and should be avoided. On an average, a patient initiated on treatment would require 8 injections in

the first year and 6 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. However, individualised care is recommended with some requiring more and others requiring fewer injections.

9.6 Non responder

A non-responder is defined as a patient whose visual acuity declines due to persistent activity of the neovascular complex despite optimally delivered treatment regimen.

1. The diagnosis should be re-evaluated as very few patients with active wet AMD do not respond to anti-VEGF therapy. This may require additional imaging with FFA and/or ICG angiography where applicable.
2. The most likely reason for non-response is inadequate therapy due to protocol deviations. Therefore, to avoid further loss, adhere strictly to a re-loading followed by treat and extend protocol[68]. Failsafe admin processes should be available to track patients with poor compliance due to co-morbidities.
3. A switch to another anti-VEGF agent is recommended in cases of allergy or presumed tachyphylaxis. In a small minority, a patient may require a switch back to previous agent or to another agent if disease worsens after the initial switch. There are practical reasons for switching regimens. For example, it may be easier to switch to a fixed regimen rather than a treat and extend protocol in some individuals to aid adherence to treatment.
4. As new treatments emerge it would be worth evaluating the effectiveness based on efficacy (improved visual or anatomical outcomes) or decrease in treatment burden. Agents with a reduced treatment burden are particularly helpful for patients with co-morbidities affecting compliance and are also useful to allow timely service delivery of care.

9.7 Special clinical scenarios

9.7.1 Submacular haemorrhage

Some eyes may present with submacular haemorrhage with poor visual acuity.

The current evidence is to initiate on anti-VEGF therapy on a monthly basis until the haemorrhage improve or futility to treatment is established. An FFA/ICG is recommended as PCV is more likely to bleed compared to active CNV.

A referral to vitreo-retinal team is recommended for possibility of pneumatic displacement and/or recombinant tissue plasminogen activator (tPA). Some patients may benefit from vitrectomy with subretinal tPA and air tamponade.

9.7.2 Polypoidal choroidal vasculopathy (PCV)

PCV may occur anywhere in the fundus. Peripapillary PCV may cause fluid to track to the macula and cause visual impairment. PCV may also present at the macula and is usually associated with visual

impairment. These eyes need to be Initiated on anti VEGF monotherapy if macula is affected by fluid due to PCV. PDT may be offered if there is insufficient response to anti-VEGF.

9.7.3 Retinal Pigment Epithelium (RPE) rip

RPE rips may occur in patients with large pigment epithelial detachments at the time of diagnosis or any time point during the course of therapy or in untreated eyes due to natural history. Intravitreal injections need to be continued unless there is foveal involvement of rip with no potential for visual acuity improvement as per decision of the treating clinician.

9.8 Complications

In services where an HCP has been delegated by a named consultant Ophthalmologist or SAS doctor with autonomous practice rights to deliver intravitreal agents, 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.

9.8.1 Endophthalmitis

The risk of endophthalmitis after anti-VEGF therapy is approximately 0.02-0.09% from randomized controlled trial data whereas real-world evidence from large cohorts suggests 0.028%. The cumulative risk per individual increases with increasing number of injections.

1. The precautions to avoid endophthalmitis include use of topical Povidone Iodine 5% pre-injection as the most effective step, supported by the use of surgical hand disinfection with sterile gloves (changed for each injection) and a “no lid touch” technique. The use of a lid speculum and face mask are mandatory. A sterile drape over the patient’s face may also be helpful or a “no-talking” technique whilst the injection is performed. Additionally, there are also injector devices available which may combine the functions of drape, caliper and speculum. Bilateral cases can be treated but separate equipment must be used for each eye and preferably different drug batches. Peri-operative or take-home topical antibiotics are not recommended. Intravitreal injections should be performed in a designated clean room compliant with RCOphth standards.
2. Services should report each endophthalmitis case to the service risks management team as part of an incident reporting system so that early recognition of clusters of cases is undertaken. Collective annual incidence should also be reported as part of an audit pathway.

9.8.2 Cataract

Patients undergoing anti-VEGF may have increased risk of age-related cataract with frequent injections. A very rare complication is iatrogenic cataract.

Cataract surgery should preferably be avoided in the first 6 months after initiation of anti- VEGF injections as complications are maximum then. Zonular dehiscence is more common in people with repeated anti VEGF injections and extra caution should be taken. Iatrogenic cataract is best managed by the vitreo-retinal team.

9.8.3 Glaucoma

There is a risk of ocular hypertension with increasing number of injections[81]. Eyes with ocular hypertension or glaucoma should have controlled IOP prior to injections. Post injection all patients get an initial spike in IOP, however only a small percentage may get sustained rise in IOP requiring treatment. The initial pressure spike may be reduced to a small degree in higher risk patients with the use of apraclonidine before injection.

1. Patients with persistent ocular hypertension should be referred to the glaucoma team for further management.
2. Routine IOP testing post injection is not recommended but annual IOP monitoring is required to identify sustained IOP rise from repeated injections.

9.8.4 Central Retinal Artery Occlusion (CRAO)

Immediate care such as anterior chamber paracentesis, acetazolamide and digital massage is indicated if there is a potential for vision improvement as determined by the clinician.

10. Monitoring

10.1 General Recommendations

Do not routinely monitor people with early AMD or late dry AMD at hospital eye services unless in clinical research.

Patients with late dry AMD, or people with AMD who have been discharged from hospital eye services should:

- Self-monitor their AMD -but please note that utilising visual function changes to monitor new or recurrent disease is not sufficiently sensitive.
- consult their eye-care professional as soon as possible if their vision changes
- continue to attend routine sight-tests with their primary care optometrist.
- OCT is the most sensitive monitoring tool. For community provision, OCT should be used to monitor patients that are at high risk of new wet AMD or being monitored for stable wet AMD.
- be provided information about sources of support for living with sight loss including local and national charities.
- be made aware of the local ECLO service, and how to re-access emotional and practical support. This would include advice on Certification and Registration.

  For people being monitored for late AMD (wet active), both eyes should be assessed at their monitoring appointments.

10.2 Self – Monitoring

Patients with AMD should be counselled by a trained HCP regarding the strategies available. Patients should be reminded that none of the strategies for home monitoring of visual function are currently sufficiently sensitive to detect disease recurrences and that OCT is the most sensitive detection tool.

Patients should be reminded that none of the strategies for home monitoring of visual function are currently sufficiently sensitive to detect disease recurrences and that OCT is the most sensitive detection tool. Patients with AMD should report any new symptoms or changes with regard to their central vision to their eye-care professional as soon as possible:

- blurred or grey patch in their vision
- straight lines appearing distorted
- objects appearing smaller than normal

It is essential to encourage and support patients with AMD who may lack confidence to self-monitor their symptoms. They should be advised to seek assistance from peer support groups or supporting organisations such as the Macular Society.
If patients are not able to self-manage their AMD, AMD monitoring techniques should be discussed with their family members or carers (as appropriate).

10.3 Monitoring nAMD

1. Patients with nAMD (wet active) should be offered ongoing monitoring with OCT for both eyes whilst within the Hospital Eye Services.
2. Offer fundus examination or colour photography if OCT appearances are stable, but:

   a. there is a decline in visual acuity or
   b. the patient reports a decline in visual function.

3. Consider FFA to identify unrecognised neovascularisation if OCT appearances are stable, but:

   a. there is a decline in visual acuity or

   b. The person reports a decline in visual function.

4. If OCT results suggest macular abnormalities but the abnormalities are not responding to treatment, consider alternate diagnosis.

10.4 Monitoring co-existent ocular pathology

1. Diabetic retinopathy: Patients with co-existent diabetes should continue attending their diabetic retinopathy screening appointment.
2. Glaucoma: Patients with co-existent glaucoma should continue their management with the glaucoma team.

10.5 Support services

10.5.1 Low Vision Aid (LVA) service

1. Patients with late AMD usually experience difficulty with visual impairment and ought to maintain regular sight tests. However, planning of the timing of refraction studies is best evaluated by the service.
2. Patients may benefit from low visual aids especially for reading and should have access to low vision aid appointments. Option of electronic devices as LVA should be presented to the patient as well.
3. Those who qualify to for visual impairment registration should be informed about this eligibility and should be registered in a timely manner.
4. Some patients may benefit from eccentric viewing training and this should be encouraged in the LVA setting itself.
5. Group based rehabilitation programme is also recommended
6. Patients who do not meet the requirements to hold a driving license due to their visual impairment should be informed that they must inform the DVLA and stop driving pending DVLA evaluation.

10.5.2 Eye Clinic Liaison Officer

All ophthalmic departments providing AMD services should have at least one ECLO to provide on-going holistic support for these patients and signposting to other services. Large services may require more than one ECLO to deal with the volume of patient assessments required. ECLO support should be provided to all patients with AMD and especially those with co-morbidities to improve patient engagement, help ensure timely treatment and follow-up and support registration and information provision. ECLO support may be needed at multiple time points during the care pathway of an individual patient. ECLO should also link into community-based AMD services. It is important the ECLO service adhere to the UK Ophthalmic Alliance Patient Standard/ Royal National Institute of Blind People (RNIB) Quality Framework to ensure a quality service is provided, that effectively meets the needs of patients and provides the right care in the AMD pathway.

11. Governance and Administrative structure for an AntiVEGF service

The service requires dedicated administrative staff available for booking patients, answering telephone calls, changes in appointments, tracking down patients who fail to attend clinic appointments. Patients value the opportunity to book their next appointment before they leave the clinic, it gives patients a sense of reassurance and helps people plan their lives. There should be senior fail-safe administrative support available within the remit of the medical retina services. Governance of the service should be led by a Consultant Ophthalmologist with Medical Retina expertise or a nominated SAS doctor with similar expertise and autonomous practice in this area. Services need to review regularly to ensure the pathway is patient focussed with efficient use of resources.

12. Auditing– quality assurance

Standardised data sets and data quality e.g., the National Ophthalmic database AMD audit is required to reduce variations in care. It enables data visibility that is consistent and reliable. Minimum datasets need to be jointly agreed with commissioner and service provider if data is not contributed to the national dataset.

Suggested minimum datasets for providers of AMD treatment are shown below:

1. Percentage of patients with confirmed Late AMD (wet active) being treated (or offered treatment) within 14 days of referral. (Actual interval versus planned interval) defined as time from referral to first treatment
2. Follow-up delays for on-going injection appointments.
3. Visual acuity change following initial three loading doses and at months 12 and 24, with adjustment for baseline visual acuity. Greater stability following initial visual gain is expected if treatment is continued at optimal intervals following loading doses.
4. Proportion of patients with a loss of visual acuity of 10 or more ETDRS letters post loading at 12 months and 24 months from initiation of treatment. A change of 10 ETDRS letters is defined as a clinically meaningful change.
5. Percentage of eyes with VA better or equal to 70 letters at month 12. This will be strongly influenced by the starting visual acuity of the local population and understanding of the need for urgent presentation and therefore may not directly be within the control of the treating service.
6. Outcomes based on drug used and their long-term effectiveness annually.
7. Annual incidence of presumed infectious endophthalmitis after intra-vitreal injection. This will be influenced by patient co-morbidities e.g., the prevalence of chronic diseases such as blepharitis within a population. Not all these co- morbidities can be controlled and delaying injections in their presence can lead to visual loss.
8. Percentage of patients with Late AMD given written, accessible information at their first appointment and whenever requested on the disease, treatment options and pathways, key local contacts, and available supports.
9. Percentage of patients with AMD offered certification of visual impairment (CVI) as soon as they become eligible, even if they are still receiving active treatment.
10. Percentage of patients with access to an ECLO during their treatment pathway
11. Monitoring of “did not attend” (DNA) and appointment cancellation rates at yearly intervals.
12. Percentage of patients that drop off the pathway every year of the patient journey.

Additional information on service quality from the following should also be made available to staff involved in the service provision:

- Friends and family Test
- Complaints and compliments
- Feedback from the Macular Society, RNIB and local patient groups
- Patient satisfaction questionnaires are also recommended.

It is recommended that standardized audit metrics to assess AMD service performance be used and audit results be shared with commissioners and regional eye care working groups. Electronic

Medical Records systems are recommended for efficient auditing recommended/required nationally.

Documentation Controls

Reference Number CG-OPHTH/2615/24	**Version:** 2		**Status** Final	
Version / Amendment History	Version	Date	Author	Reason
	1	Jun 2018	Clinical Lead	New guideline
	2	Apr 2024	Anil Kumar	Major review
Intended Recipients: Ophthalmology Clinical Teams				
Training and Dissemination: Department dissemination via communications and team meetings				
Development of Guideline: **Job Title:** Anil Kumar, Assistant Clinical Director - Ophthalmology Transformation				
Consultation with: Head, Neck, Eyes and Plastics Business Unit and Ophthalmology Leadership team and Ophthalmology clinical team				
Linked Documents: NA				
Keywords: Age Related Macular Degeneration, AMD, Ophthalmology				
Business Unit Sign Off			**Group:** HNEP QSR **Date:** 17/04/2024	
Divisional Sign Off			**Group:** Surgery DQRG **Date:** 30/04/2024	
Date of Upload			May 2024	
Review Date			May 2027	
Contact for Review			Anil Kumar, Assistant Clinical Director - Ophthalmology Transformation	