Ophthalmology
Focused on you

Bayer Ophthalmology Masterclass Programme
Nurse and Allied Health Professional Education

Nurse and Allied Healthcare Professionals Educational Reference Cards

EYLEA® (aflibercept) 2 mg is indicated for adults for the treatment of:[1]

- Neovascular (wet) age-related macular degeneration (AMD)
- Visual impairment due to macular oedema secondary to retinal vein occlusion (branch RVO or central RVO)
- Visual impairment due to diabetic macular oedema (DMO)
- Visual impairment due to myopic choroidal neovascularisation (myopic CNV)

Prescribing information and adverse event reporting information for EYLEA® (aflibercept) is available via the QR code on the right.

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1. Bayer plc. EYLEA® 40 mg/mL Summary of Product Characteristics.

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Educational Reference Card

Imaging in medical retina

Introduction

Retinal imaging is a vital tool for the diagnosis and monitoring of retinal diseases.

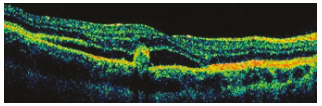
There are a number of different imaging techniques; this quick reference card provides an overview of those in common use.

Non-invasive techniques

Optical Coherence Tomography (OCT)

OCT is a non-invasive technique that enables the evaluation of the structures within the eye at a cellular level, achieving a resolution of 2–3 microns.[1]

The technique is similar to an ultrasound, except that the image is created from reflected and back scattered light, rather than sound. The intensity of the back scattered light represents the reflectivity of the different ocular structures.[1]



OCT images can be displayed as grey scale or false colour, with structures of high reflectivity displayed as white or light colours and areas of low reflectivity shown as black or blue.[1]

Uses[1]	Benefits[1]
Critical tool in diagnosis and monitoring of ocular disease involving the:	> Easy to use
> Retina	> Reproducible
> Choroid	> Non-invasive
> Optic nerve	> Can image through opacities such as vitreous haemorrhage, cataract and silicone oil
> Anterior segment	

OCT angiography (OCT-A)

OCT-A, unlike FFA (fundus fluorescein angiography) and ICGA (indocyanine green angiography), is non-invasive; using motion-contrast imaging instead of dyes to produce high-resolution, cross-sectional scans of vascular flow. However, there is currently little consensus on its role in diagnosis and monitoring of retinal patients.[2]

Fundus autofluorescene (FAF)

FAF is a non-invasive imaging technique that maps naturally occurring fluorescent molecules - fluorophores - in the retina. This provides information on the metabolic state and overall health of the RPE (retinal pigment epithelium), and indirectly, the photoreceptor layer. FFA is used clinically to evaluate a range of retinal disorders including AMD (age-related macular degeneration).[3]

Invasive techniques

Angiography with fluorescent dyes

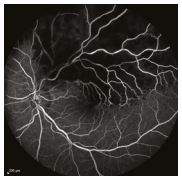
There are two main types of fluorescent angiography in common usage:[1]

> FA (fluorescein angiography) or FFA

> ICGA

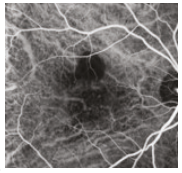
Both involve the systemic infusion of a fluorescent dye that is detected over time within the eye by sequential imaging. Use of these techniques can help characterise retinal and choroidal blood flow. Areas of hypofluorescence indicate blockage or vascular filling defects; areas of hyperfluorescence most usually indicate dye leakage from vessels into the extravascular space.[1]

FFA



The characteristics of the fluorescein dye means it is an ideal tool for evaluating the retinal circulation, its vascular architecture and the status of the blood-retina barrier; it can also provide some information on the choroidal circulation and RPE. It is therefore useful in the diagnosis of vascular diseases such as diabetic retinopathy, central serous chorioretinopathy, venous occlusive disorders and choroidal neovascularisation secondary to age-related macular degeneration (CNV-AMD).[1]

ICGA

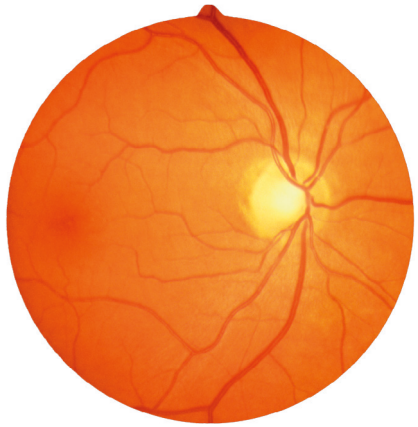


The fluorescent characteristics of the indocyanine green dye allows deep penetration into the retina and the emitted light can pass easily through features like the RPE and blood and lipid deposits. It is ideal for characterising the choroidal circulation and aiding diagnosis of diseases such as wet AMD, idiopathic polypoidal chorodial vasculopathy (IPCV) and inflammatory conditions.[2] Both dyes are associated with adverse events of varying degrees of severity from mild to severe.[1]

Fundus photography

Colour fundus photography typically views the 30 degrees of the posterior pole of the eye including the macular and optic nerve.[4]

Newer developments in retinal imaging, including wide-field and ultra-wide-field fundus photography can capture retinal images of >50 and >100 degrees, respectively.[5] Wide-field fundus photography can image the peripheral retina as well, even in undilated eyes.[4]



Summary

Many different imaging techniques can be used to diagnose and monitor retinal diseases.

1. Yanoff M & Duker JS. Ophthalmology. 4th ed; 2014. **2.** Rodriguez FJ *et al. Graefes Arch Clin Exp Ophthalmol* 2018; 256 (11): 2019–2026. **3.** Yung *et al. Int J Retin Vitr* 2016; 2 (12): 1–25. **4.** Singh, RP. Managing Diabetic Eye Disease in Clinical Practice 2015. **5.** StatPearls. Fundus Camera. Available at: https://www.ncbi.nlm.nih.gov/books/NBK585111/. Accessed December 2024.

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Educational Reference Card

Diabetic macular oedema (DMO)

Introduction

Diabetes can result in a number of ophthalmic conditions such as diabetic retinopathy and sight-threatening complications such as DMO.

This quick reference card introduces the key clinical considerations for DMO, the most important cause of visual impairment in patients with diabetes.

Screening

The national diabetic eye screening (DES) programme aims to reduce the risk of sight loss through early detection and treatment (if required) of diabetic patients.[1]

Screening is not the same as diagnosis as there will always be some false negative or false positive results.[2]

Diabetes and diabetic retinopathy

Diabetic retinopathy is the progressive damage of the retinal vasculature caused by chronic hyperglycaemia.[3] Successful management requires a combination of glucose and blood pressure control with some patients requiring additional treatment interventions.[3]

Medical management recommendations in adult patients:[4]

- A personalised HbA1c target usually between 48–58 mmol/mol (6.5–7.5%)
- Systolic blood pressure ≤130 mmHg in those with established retinopathy and/or nephropathy.

Key features of diabetic retinopathy[3]

- Microaneurysms
- Retinal haemorrhages
- Retinal lipid exudates
- Cotton wool spots
- Capillary non-perfusion
- Macular oedema
- Neovascularisation

Classification of diabetic reinopathy[4]

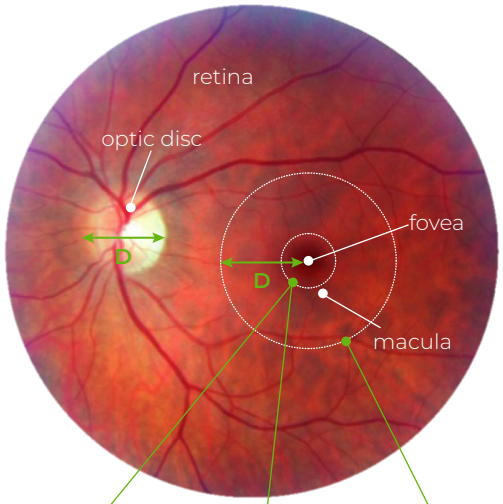
Diabetic retinopathy is classified according to the presence or absence of abnormal new vessels as:

- Non-proliferative diabetic retinopathy (NPDR): characterised by capillary occlusion
- Proliferative diabetic retinopathy (PDR): characterised by growth of new vessels on the disc (NVD) or new vessels elsewhere (NVE).

Macular changes in NPDR involve thickening of the retina due to accumulation of exudative fluid from damaged outer blood-retina barrier (extracellular oedema) or resulting from hypoxia leading to fluid accumulation in individual retinal cells (intracellular oedema).

Classification of DMO[5]

The pivotal National Eye Institute Early Treatment Diabetic Retinopathy Study (ETDRS) classified macular oedema as "clinically significant" if one or more of the following, seen at clinical examination, is present.



	OR	OR
Thickening of the retina at or within 500 µm of the centre of the macula (fovea).	Hard exudates at or within 500 µm of the fovea, if associated with thickening of the adjacent retina.	A zone of retinal thickening 1 disc area or larger, any part of which is within 1 disc diameter of the centre of the macula.

D = disk diameter

Treatment options

Anti-VEGF (vascular endothelial growth factor)

Anti-VEGF injections are considered the standard of care for eyes with centre-involving macular oedema and reduced vision.[6,7]

Intravitreal corticosteroid

This should be reserved for pseudophakic eyes with low visual acuity (VA) and central thickening.[6]

Focal/grid macular laser

This should be considered for non-foveal-involving DMO. May have a role in centre-involving DMO if VA is normal or minimally reduced. Laser may be used in combination with other treatments.[4]

Treatment selection is influenced by:[4]

- VA
- Centre or non-centre involving DMO
- Central macular thickness
- Pseudophakic or vitrectomised eye.

Summary

DMO is a sight-threatening complication of diabetes. Early detection and monitoring is important. In addition to direct management, good glycaemic control is beneficial for eye health and ophthalmic professionals should also encourage patients on this aspect of their general health.

1. NHS. NHS Diabetic Eye Screening Programme. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/505587/DES_07_GP_information_sheet_March_2016.pdf. Accessed December 2024. **2.** Peate I. *BJHCA* 2019; 13 (12). Available at: https://doi.org/10.12968/bjha.2019.13.12.596. Accessed December 2024. **3.** Yanoff M & Duker JS. Ophthalmology. 4th ed; 2014. **4.** Royal College of Ophthalmologists. Diabetic Retinopathy Guidelines. Available at: https://www.rcophth.ac.uk/wp-content/uploads/2021/08/2012-SCI-267-Diabetic-Retinopathy-Guidelines-December-2012.pdf. Accessed December 2024. **5.** ETDRS Research Group. *Arch Ophthalmol* 1985; 103 (12): 1796–1806. **6.** Downey L *et al. BMJ Open Ophthalmology* 2021; 6: e000696. doi: 10.1136/bmjophth-2020-000696. **7.** Cheung N *et al. Eye* 2020; 24: 999–1002.

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Educational Reference Card

Intravitreal injection: processes and considerations

Introduction

Patients may need to undergo intravitreal injections (IVTs) for the treatment of a number of retinal conditions such as wet age-related macular degeneration (wAMD), diabetic macular oedema (DMO) or retinal vein occlusion (RVO).

This quick reference card is designed to help you gain an understanding of the intravitreal injection procedure so that you can communicate and counsel patients effectively at each stage of the process.

Injection room standards[1]

Procedures may be carried out in theatre or, more usually, in a suitable room in an outpatient setting with full sterile precautions. The Royal College of Ophthalmologists has published standards for intravitreal injection procedures which include guidance on clinical care setting.

Before[1]

Patient counselling

Patients should be fully informed about the importance of treatment, treatment options and why IVT is appropriate for the patient. They should also be informed about what treatment involves, what to expect and possible risks.

Consent

Consent is a vital step in the intravitreal injection procedure. Valid consent must be obtained from the patient prior to the first IVT procedure; this will normally cover a course of treatment over several months, although local hospital consent policies may vary frequency and duration of valid consent.[1] The consent form should be completed accurately and clearly, and signed by the treating clincian and the patient.[2]

When not to inject

There are situations where it is not appropriate to inject the patient, for example if the patient has an active inflammation or infection, blepharitis, systemic infection or illness, which should be treated prior to injection[3,4]

During

Anaesthesia

Many different anaesthetics are used in intravitreal injection procedures and all are associated with similar pain scores . Examples of commonly used formulations for IVT include:[5]

- Proxymetacaine hydrochloride
- Tetracaine hydrochloride
- Lidocaine hydrochloride

Anaesthetics for IVTs may be injected or applied as drops, gels or soaked swabs.[5]

Asepsis

Povidone iodine 5% solution or chlorhexidine 0.1% solution may be used.[1] Povidone-iodine is one of the most commonly used antiseptic with a fast kill-time (15–120s), negligible resistance and rare reports of anaphylaxis.[6]

Masking

Wearing a mask is recommended.[1] Wearing a face mask is an important approach to prevent endophthalmitis.[7] Masking can prevent contamination from oropharyngeal droplets.[8]

Hand decontamination

Hands should undergo surgical disinfection and sterile gloves should be worn.[1]

After

Antibiotics

The use of peri-injection antibiotics is no longer recommended.[1] Evidence from large meta-analyses (N=147,440 eyes) suggest that antibiotic usage does not reduce the incidence of endophthalmitis.[9] The use of prophylactic topical antibiotics following intravitreal injection may lead to higher rates of antibiotic-resistant bacteria in culture-positive endophthalmitis cases.[10]

Discharge[1]

It is important to advise patients of post-injection managment and vigilance. Patients should be instructed to immediately report to the eye department symptoms which might indicate serious complications, particularly endophthalmitis, e.g. increasing pain or discomfort, increased redness of the eye, or additional blurring of vision. Patients should be informed that some blurring of vision is common immediately post-injection; this is often described as 'seeing spots of floating in the eye'. The floaters usually resolve after a few days to a week.

Summary

Intravitreal injection procedures and practice vary locally; make sure you are aware of the procedures that are recommended and relevant to your clinical setting.

The Royal College of Ophthalmologists issued guidance on intravitreal injection in August 2018.[1] This can provide further information.

1. Royal College of Ophthalmologists. Intravitreal injection therapy. Available at: https://www.rcophth.ac.uk/wp-content/uploads/2022/02/Intravitreal-Injection-Therapy-August-2018-1.pdf. Accessed December 2024. **2.** RCOphth. Intravitreal consent form. Available at: https://www.rcophth.ac.uk/wp-content/uploads/2022/01/Intravitreal-Injection-Consent-Form-1_COVID19_.pdf. Accessed December 2024. **3.** American Academy of Ophthalmology (AAO). How to Give Intravitreal Injections. Available at: https://www.aao.org/eyenet/article/how-to-give-intravitreal-injections#:~:text=Active%20external%20eye%20infection%20(including,be%20treated%20prior%20to%20injection. Accessed December 2024. **4.** Moorfields Eye Hospital. Patient Information: anti-VEGF intravitreal injection treatment. Available at: https://www.moorfields.nhs.uk/mediaLocal/fmincyp1/anti-vegf-intravitreal-injection-treatment.pdf. Accessed December 2024. **5.** Han J *et al. Clin Ophthalmol* 2020; 14: 543–550. **6.** Merani R and Hunyor AP. *Int J Retina Vitr* 2015;1:9. doi: 10.1186/s40942-015-0010-y. **7.** Patel SN *et al. Ophthalmology* 2021; 128 (11): 1620–1626. **8.** McCannel C. *Retina* 2011; 31: 654–661. doi: 10.1097/IAE.0b013e31820a67e4. **9.** Morioka M *et al. Sci Rep* 2020; 10: 22122. doi: 10.1038/s41598-020-79377. **10.** Storey P *et al. Graefes Arch Clin Exp Ophthalmol* 2016; 254: 235-242. doi: 10.1007/s00417-015-3035-x.

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Educational Reference Card

Motivational interviewing to support ophthalmic patients[1]

Introduction

Sight loss impacts patients in a number of ways: through changes in their perception and a loss of identity and independence, which may be linked to health-threatening behaviours such as social isolation.[2]

This quick reference card provides insights that will help you support patients with sight-threatening conditions and enhance the self-management of their condition.

Understanding patient anxiety

Patients undergoing treatment may also experience anxiety and depression.

56% of patients with wet age-related macular degeneration (wAMD) report anxiety related to anti-VEGF (vascular endothelial growth factor) treatment. Concerns include:

- Fear of going blind due to injections / fear of needle in the eye
- Treatment effectiveness
- Waiting in the waiting room / anticipatory anxiety
- Fear of the unknown in relation to treatment outcomes and disease progression
- Anxiety caused by being in the eye hospital for a medical appointment, exam or eye-treatment.

This anxiety persists regardless of the number of injections a patient has undergone.

Anxiety and depression can:

- Reduce a patient's ability to take in information
- Result in selective attention
- Reduce the patient's ability to make connections with existing information
- Prevent the patient from recalling information.

Motivational interviewing is a collaborative conversation that elicits and strengthens patient's ability to self-manage and make lifestyle behaviour changes.[3]

It has 4 steps:

1 Engaging

Use careful listening and demonstrate you have listened and understand.

1. Repeat: repeat an element
2. Rephrase: repeat using different words
3. Paraphrase: repeat with a best guess at the meaning
4. Reflect feeling: paraphrase to emphasise the emotional dimension and give a new perspective.

2 Focusing

Establish how your agenda and the patient's agenda overlap and build your discussion around the shared priorities.

Use open questions to funnel down to closed questions in order to establish priorities.

Focusing aids for review in the waiting area can help with this activity.

3 Evoking

This is about helping the patient to identify and build on ways to change.

Listen for and encourage 'DARN CAT'.

DARN: preparation

Desires: "I would..."

Abilities: "I can, I could..."

Reasons: "Because..."

Needs: "It's very important..."

CAT: action

Commitment: "I'm going to..."

Activation: "I'm ready to..."

Taking steps: "I've already done..."

4 Planning

Focus on behaviours to reach goals.

- Ask the patient for the key reasons for change and why they are so important
- Agree how often, how much, when, with who
- Identify potential problems and focus on solutions
- Ask what support they might need.

Summary

You can build some or all of these techniques into your general interactions and consultations with patients with a goal of enhancing patient engagement.

1. Senra H *et al. Am J Ophthalmol* 2017; 177: 213–224. doi: 10.1016/j.ajo.2017.03.005. **2.** Rokach A *et al. Front Psychol* 2021; 12: 641711. **3.** Bischof G *et al. Dtsch Arztebl Int* 2021; 118 (7): 109–15.

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Educational Reference Card

Retinal Vein Occlusion (RVO)

Introduction

Venous occlusive disease of the retina is the second most common retinal vascular disorder after diabetic retinopathy.[1]

This quick reference card explains how RVO is classified and diagnosed, and how macular oedema secondary to RVO is managed.

Risk factors[2]

Retinal vein occlusion is due to thrombosis of retinal veins. A range of conditions have been associated with RVO: the most common association relates to a raised risk of atherosclerosis. Other associated conditions are those that cause hyperviscosity or slow or turbulent flow through retinal veins. As a result, medical tests in RVO aim to improve health by treating the commonly associated risk factors of atherosclerosis, hypertension, diabetes and lipid abnormalities.

Types of RVO

Central (CRVO)[2]

Image courtesy of Mrs Deepali Varma, Sunderland Eye Infirmary

CRVO results from thrombosis of the central retinal vein when it passes through the lamina cribrosa.

Key features

- Disc oedema (may be absent in less severe forms)
- Increased dilation and tortuosity of all retinal veins
- Widespread deep and superficial haemorrhages
- Cotton wool spots
- Retinal oedema and capillary non-perfusion in all four quadrants of the retina

Branch (BRVO)[2]

Image courtesy of Robin Hamilton, Moorfields Eye Hospital

BRVO is caused by venous thrombosis at an arteriovenous crossing where an artery and vein share a common vascular sheath.

Key features

- Similar to those of CRVO except confined to the portion of the fundus drained by the affected vein

Hemi (HRVO)

Refers to obstructions in the first branch of the central retinal vein near the margin of the optic disc and affects an entire hemisphere of the retina;[3] either the superior or inferior retinal hemisphere.[2]

Key features

- Similar to those of CRVO except the retinal haemorrhages are nearly equal in two altitudinal quadrants (the nasal and temporal aspects) of the involved hemisphere.[2]

Retinal ischaemia[2]

CRVO and BRVO can also be classed as ischaemic or non-ischaemic based on the area of capillary non-perfusion. Ischaemia increases production of vascular endothelial growth factor (VEGF) and other cytokines, which promote new vessel formation principally involving the iris and angle in CRVO and the retina in BRVO.

These complications can lead to neovascular glaucoma, vitreous haemorrhage and tractional retinal detachment with severe visual impairment.

Macular oedema (MO)[2]

MO is one of the main complications of RVO. MO results from increased capillary permeability leaking fluid and blood in the retina. Co-existent ischaemia and increased VEGF can exacerbate this process. MO is the most common cause of visual impairment in RVO, followed by foveal ischaemia.

Treatment of MO secondary to RVO

There are a number of treatment options for CRVO and BRVO (please refer to the guidelines for full recommendations):

- Anti-VEGF: ranibizumab and aflibercept are the two anti-VEGF agents accepted by the National Institute for Health and Care Excellence (NICE) and the Scottish Medicines Consortium (SMC) for MO due to CRVO or BRVO. Please refer to the relevant guidelines for full recommendations.[4–9]
- Dexamethasone intravitreal implants are also recommended by NICE for MO secondary to CRVO or BRVO[10]
- Pan retinal photocoagulation is the mainstay of treatment when iris new vessels (NVI) or angle new vessels (NVA) are visible.[2]

Summary

Differential diagnosis of RVO types is possible due to accurate imaging and effective medical history taking. Treatment aims to preserve eye sight.

1. Campochiaro P. *Invest Ophthalmol Vis Sci* 2021; 62 (14): 26. **2.** Royal College of Ophthalmologists. Retinal Vein Occlusion (RVO) Clinical Guidelines. Available at:https://www.rcophth.ac.uk/wp-content/uploads/2015/07/Retinal-Vein-Occlusion-Guidelines-2022.pdf. Accessed December 2024. **3.** Campochiaro P *et al*. *Ophthalmology* 2015; 122 (3): 538–544. **4.** NICE. Aflibercept for treating visual impairment caused by macular oedema secondary to central retinal vein occlusion. Available at: https://www.nice.org.uk/guidance/ta305/resources/aflibercept-for-treating-visual-impairment-caused-by-macular-oedema-secondary-to-central-retinal-vein-occlusion-pdf-82602367656901. Acessed December 2024. **5.** NICE. Aflibercept for treating visual impairment caused by macular oedema after branch retinal vein occlusion. Available at: https://www.nice.org.uk/guidance/ta409/resources/aflibercept-for-treating-visual-impairment-caused-by-macular-oedema-after-branch-retinal-vein-occlusion-pdf-82604551157701. Accessed December 2024. **6.** Ranibizumab for treating visual impairment caused by macular oedema secondary to retinal vein occlusion Available at: https://www.nice.org.uk/guidance/ta283/resources/ranibizumab-for-treating-visual-impairment-caused-by-macular-oedema-secondary-to-retinal-vein-occlusion-pdf-82600671244741. Accessed December 2024. **7.** SMC. Ranibizumab is accepted for use within NHS Scotland. Available at: https://www.scottishmedicines.org.uk/medicines-advice/ranibizumab-lucentis-resubmission-73211/. Accessed December 2024. **8.** SMC. Aflibercept is accepted for use within NHS Scotland. Available at: https://www.scottishmedicines.org.uk/medicines-advice/aflibercept-eylea-fullsubmission-107415/. Accessed December 2024. **9.** SMC. Ranibizumab is accepted for restricted use within NHS Scotland. Available at: https://www.scottishmedicines.org.uk/medicines-advice/ranibizumab-lucentis-fullsubmission-73211/. Accessed December 2024. **10.** NICE Dexamethasone intravitreal implant for the treatment of macular oedema secondary to retinal vein occlusion. Available at: https://www.nice.org.uk/guidance/ta229/resources/dexamethasone-intravitreal-implant-for-the-treatment-of-macular-oedema-secondary-to-retinal-vein-occlusion-pdf-82600318525381. Accessed December 2024.

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Educational Reference Card

Visual acuity (VA)

Introduction

Visual acuity relates to central vision and is a test of macular function.[1] It categorises the ability of a patient's visual system to resolve fine detail – i.e the smallest gap between two objects that a person can see.[2]

This quick reference card gives an overview of the standard approaches used to assess visual acuity and some considerations.

Practical aspects of measuring VA

VA measurements should be made with glasses or contact lenses in place to ensure proper refraction of the patient – this is referred to as best corrected visual acuity (BCVA).

Possible sources of error when measuring VA

- Patients wear incorrect refractive correction (always consider a new refraction to find out the optimal VA)
- Patient nervous about going 'wrong'
- Examiner not occluding the fellow eye properly
- Patient inadvertently looking through fingers if occluding their own eye
- Patient pressing firmly on their own eye when occluding it and making it blurry
- Patient leaning forward and shortening the distance between the patient and the chart.

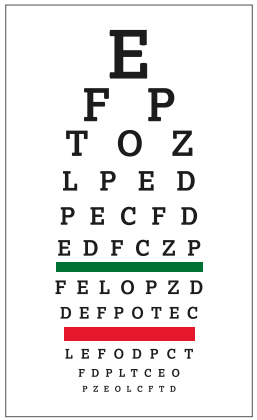
Snellen chart[1]

The patient must be seated 6 metres (20 feet) from the chart. VA is expressed as a fraction, eg:

$$\frac{6}{6}$$

6 – Distance of the chart from the patient

6 – Numerical number of the line down to which the patient can read



Advantages

- Widely recognised terminology
- Used in Driver and Vehicle Licensing Agency (DVLA) driving vision standards[3]

Disadvantages[4]

- Different number of letters per line
- Inconsistent change in letter size between rows
- Not all presented characters are equally legible

Translating between Snellen and LogMAR charts[5]

There is no direct correlation between Snellen and LogMAR charts and this can cause confusion when translating between charts or when some clinics use Snellen and others use LogMAR.

Charts providing a read-across from one chart type to another support translation.

LogMAR	Snellen equivalent
1.0	6/60
0.9	6/48
0.8	6/38
0.7	6/30
0.6	6/24
0.5	6/19
0.4	6/15
0.3	6/12
0.2	6/9.5
0.1	6/7.5
0.0	6/6
-0.1	6/5

Early Treatment Diabetic Retinopathy Study (ETDRS) chart[6]

LogMAR charts, such as the ETDRS chart, were designed to overcome the limitation of the Snellen chart and improve measurement accuracy. The examiner scores visual acuity letter by letter rather than line by line.[7]

ETDRS charts use a 4 metre test distance.[8]

Advantages[4]

- Equal number of characters per row
- Consistent change in letter size between rows
- Use of character types of equal legibility
- Recommended 'gold standard' for obtaining reliable visual acuities.[9]

Disadvantages

- Not used in DVLA driving vision standards

Summary

Visual acuity measurements inform treatment decisions and can impact the day-to-day activities of patients such as their ability to drive. Effective and consistent assessment of VA is required to ensure optimal patient care.

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Educational Reference Card

Wet age-related macular degeneration (wAMD)

Introduction[1]

Age-related macular degeneration (AMD) is the term given to ageing changes without any other obvious causes that occurs in the macula, sometimes with new blood vessel formation (wAMD). AMD is the most common cause of visual impairment in the developed world.

This quick reference card introduces the classification of AMD, then focuses on the diagnosis and treatment of wet AMD.

Supporting patients[1]

Patients with AMD may have other comorbidities and also be at risk of depression; you should look out for depression and seek to address.

You can also support patients by referring them to low vision services.

Classification[1]

Early AMD

Low risk of progression:

- Medium drusen (63–125 µm) or
- Pigmentary abnormalities

Medium risk of progression:

- Large drusen (≥125 µm) or
- Reticular drusen or
- Medium drusen with pigmentary abnormalities

High risk of progression:

- Large drusen (≥125 µm) with pigmentary abnormalities or
- Reticular drusen with pigmentary abnormalities or
- Vitelliform lesion without significant visual loss (best-corrected acuity >6/18) or
- Atrophy <175 µm 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 neovascularisation)
- Serous pigment epithelial detachment (PED) without neovascularisation.

Late AMD (wet active)

- Classic choroidal neovascularisation (CNV)
- Occult (fibrovascular PED and serious PED with neovascularisation)
- Mixed (predominantly or minimally classic CNV with occult CNV)
- Retinal angiomatous proliferation (RAP)
- Polypoidal choroidal vasculopathy (PCV).

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).

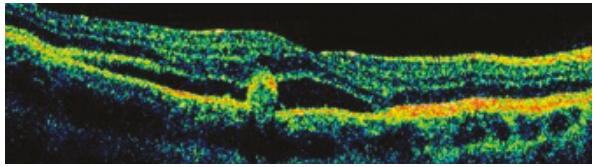
NOTE: Eyes may still develop or have a recurrence of late AMD (wet active).

Referral and treatment

Confirmation of diagnosis

Conduct[1]

- Clinical examination
- Optical coherence tomography (OCT)
- Fundus fluorescein angiography (FFA) if OCT does not exclude neovascular disease



Treatment

The current standard of care for wet AMD (active) is intravitreal injection with anti-vascular endothelial growth factor (anti-VEGF).[1]

Licensed anti-VEGF treatments include aflibercept, ranibizumab, brolucizumab and faricimab.[1–5] NICE recommend that licensed anti-VEGFs can be given if all of the following criteria are met in the eye to be treated:*[1–5]

- Best corrected visual acuity is between 6/12 and 6/96
- There is no permanent structural damage to the central fovea
- The lesion size is ≤12 disc areas in greatest linear dimension
- There is evidence of recent presumed disease progression (blood vessel growth, as indicated by fluorescein angiography, or recent visual acuity changes).

Treatment should only be continued in patients who maintain an adequate response to therapy.[2–5]

Summary

The prompt diagnosis and referral of active wAMD patients is important in helping stabilise vision with anti-VEGF treatments. In addition to active treatment for AMD, patients should also be supported with low-vision aids and in addressing other related conditions such as anxiety.

*Note that the criteria for anti-VEGF treatments listed are for England only. **1.** NICE. Age-related macular degeneration. Available at: https://www.nice.org.uk/guidance/ng82/resources/agerelated-macular-degeneration-pdf-1837691334853. Accessed December 2024. **2.** NICE. Ranibizumab and pegaptanib for the treatment of age-related macular degeneration [TA155]. Available at:https://www.nice.org.uk/guidance/ta155/resources/ranibizumab-and-pegaptanib-for-the-treatment-of-agerelated-macular-degeneration-pdf-82598316423109. Accessed December 2024. **3.** NICE. Aflibercept solution for injection for treating wet age-related macular degeneration [TA294]. Available at: https://www.nice.org.uk/guidance/ta294/resources/aflibercept-solution-for-injection-for-treating-wet-agerelated-macular-degeneration-pdf-82600733390533. Accessed December 2024 **4.** NICE. Brolucizumab for treating wet age-related macular degeneration [TA672]. Available at: https://www.nice.org.uk/guidance/ta672/chapter/1-Recommendations. Accessed December 2024. **5.** NICE. Faricimab for treating wet age-related macular degeneration [TA800]. Available at: https://www.nice.org.uk/guidance/ta800/chapter/1-Recommendations. Accessed December 2024.

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