Diabetic retinopathy

After assessing eyes with diabetic retinopathy, treat and monitor each eye separately based on the eye's active pathologies.

Diabetic retinopathy includes non-proliferative diabetic retinopathy, proliferative diabetic retinopathy, diabetic macular oedema and diabetic macular ischaemia.

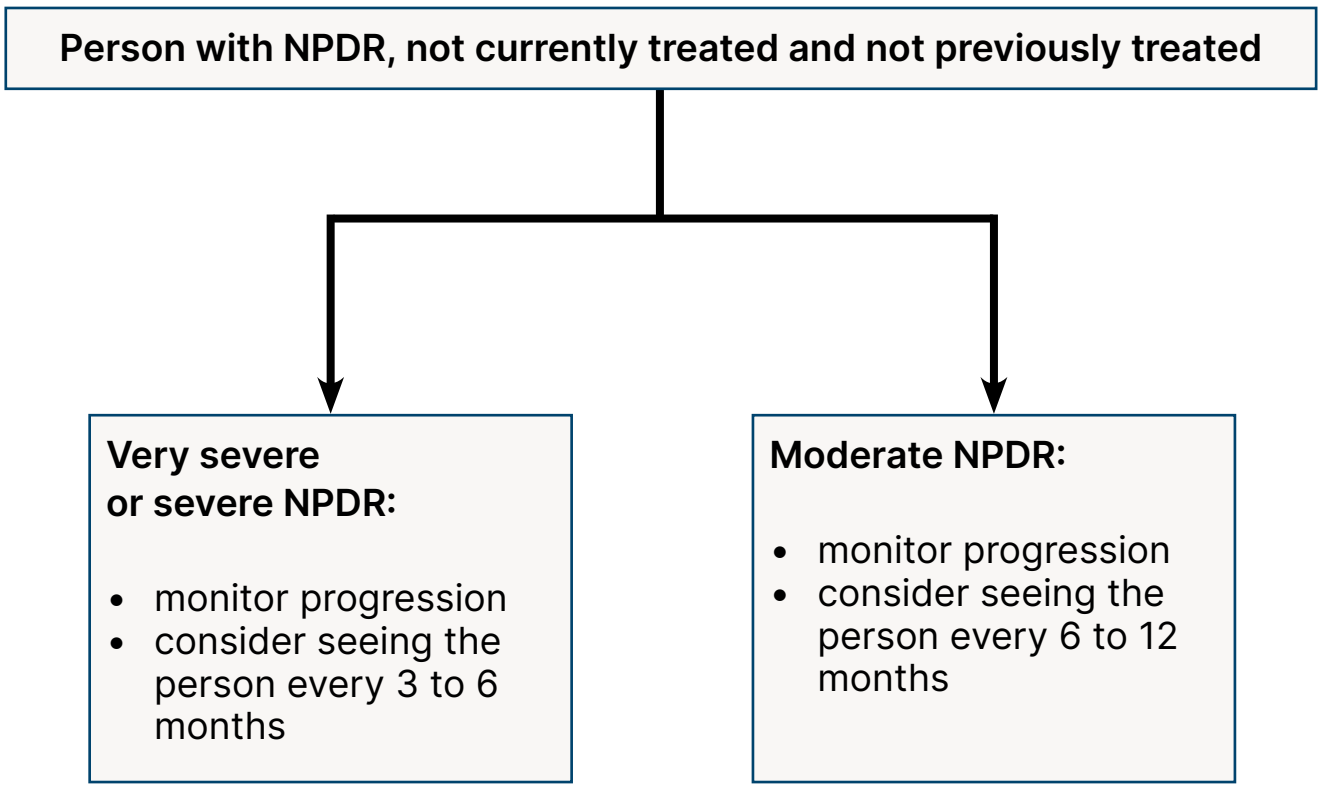
At all times, follow NICE's guidelines on patient experience in adult NHS services, babies, children and young people's experience of healthcare and shared decision making.

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

NICE National Institute for Health and Care Excellence

Non-proliferative diabetic retinopathy (NPDR) Monitoring



If pregnant, see the section on retinal assessment during pregnancy in NICE's guideline on diabetes in pregnancy

Last updated August 2024. ISBN 978-1-4731-5691-3.

Proliferative diabetic retinopathy (PDR) Management

Person with PDR

Discuss benefits and potential side effects of:

- panretinal photocoagulation
- anti-VEGFs
- no treatment (observation)

Tell the person:

- what proliferative diabetic retinopathy is, and whether they have high-risk characteristics (see definition, page 9)
- that panretinal photocoagulation is usually the first treatment for most people with PDR
- which treatment is likely to work best for them

Offer to start **on the same day** for people with high-risk characteristics or difficulty attending appointments

For everyone, use the following timeframes:

- **start** panretinal photocoagulation **within 4 weeks** of offering, **if possible**
- if it cannot be started within 4 weeks, start it **within 6 weeks** of offering
- **complete** within 4 weeks of starting it

Consider anti-VEGF as a temporary solution if the person:

- has vitreous haemorrhage secondary to proliferative diabetic retinopathy which is preventing panretinal photocoagulation
- needs cataract surgery and the severity of the cataract is preventing panretinal photocoagulation

(In August 2024, the only anti-VEGF treatment licensed for proliferative diabetic retinopathy was ranibizumab, and use of any other anti-VEGF treatment would be off-label)

Offer panretinal photocoagulation when the person is first diagnosed with PDR

Panretinal photocoagulation complete (see definition, page 9) and PDR inactive?

Yes

After 2 to 3 months, assess disease regression (see definition, page 9)

Has the disease regressed?

Yes

Monitor

No

Go back to start of page

No

Offer anti-VEGFs
(In August 2024, the only anti-VEGF treatment licensed for proliferative diabetic retinopathy was ranibizumab, and use of any other anti-VEGF treatment would be off-label)

When a person with vitreoretinal traction or tractional retinal detachment is having anti-VEGF treatment, monitor them closely in collaboration with a vitreoretinal specialist

Non-macula-involving and non-macula-threatening retinal detachment despite complete panretinal photocoagulation and:

- active PDR or
- recurring vitreous haemorrhages related to active PDR or vitreomacular traction?

Consider vitrectomy

Macula-involving or macula-threatening retinal detachment?

Offer vitrectomy

Non-clearing vitreous haemorrhage?

Consider vitrectomy. Perform it within 3 months of offering

For off-label use (as mentioned), see NICE's information on prescribing medicines

Last updated August 2024. ISBN 978-1-4731-5691-3.

Proliferative diabetic retinopathy (PDR) Monitoring

Person who has had treatment for PDR and whose disease has regressed

If pregnant, see the section on retinal assessment during pregnancy in NICE's guideline on diabetes in pregnancy

For the first 12 months after the end of treatment, monitor under HES. Individualise the monitoring frequency

After the first 12 months

Has the retina got features that make it ineligible for the diabetic eye screening programme?

No

Discharge to diabetic eye screening programme

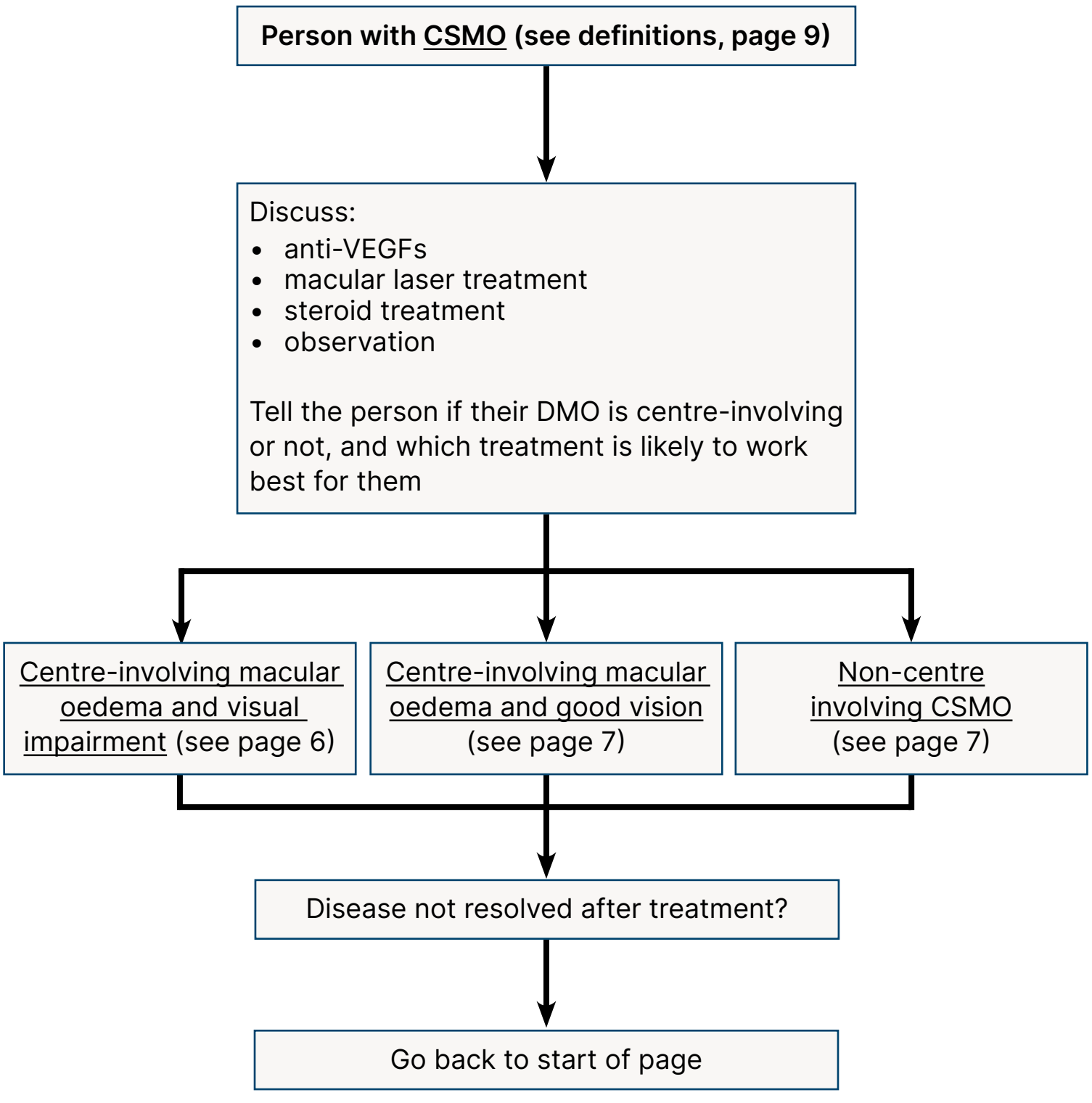
Yes

Monitor under HES and consider seeing the person every 12 months

Consider using ultrawide-field fundus imaging alongside clinical examination

Last updated August 2024. ISBN 978-1-4731-5691-3.

Clinically significant macular oedema (CSMO) Management (1 of 3)



Last updated August 2024. ISBN 978-1-4731-5691-3.

Managing centre-involving macular oedema and visual impairment (2 of 3)

Person with centre-involving macular oedema (see definitions, page 9) and visual impairment

- Central retinal thickness of 400 micrometres or more: offer anti-VEGFs
- Central retinal thickness of less than 400 micrometres: consider anti-VEGFs or macular laser
- If the person cannot have non-corticosteroid therapy, consider an intravitreal steroid implant

(In August 2024, anti-VEGF treatments licensed for visual impairment due to diabetic macular oedema were ranibizumab, brolucizumab, faricimab and aflibercept. Use of any other anti-VEGF treatment would be off-label)

After loading phase, assess response to anti-VEGF treatment

Suboptimal response to treatment (see definition, page 9)?

Yes → Consider macular laser as adjuvant therapy (see definition, page 9)

No

After 12 months, assess response to treatments

Suboptimal response to treatment?

Yes

No

Is the person on anti-VEGFs and ok to continue with anti-VEGFs?

No → Consider switching to an intravitreal steroid implant

Yes

Has the disease resolved (see definition, page 9)?

Yes

Monitor

No

No response to anti-VEGFs and either:

- vitreomacular traction or
- epiretinal membrane?

Check for warning signs of permanent damage (see definition, page 9) and consider vitrectomy before any permanent damage occurs

Go back to start of management algorithm for CSMO (page 5)

At any time after the start of treatment, consider an intravitreal steroid implant if people with centre-involving diabetic macular oedema have visual impairment (see definitions, page 9) and do not want to continue with regular anti-VEGF treatment

For off-label use (as mentioned), see NICE's information on prescribing medicines

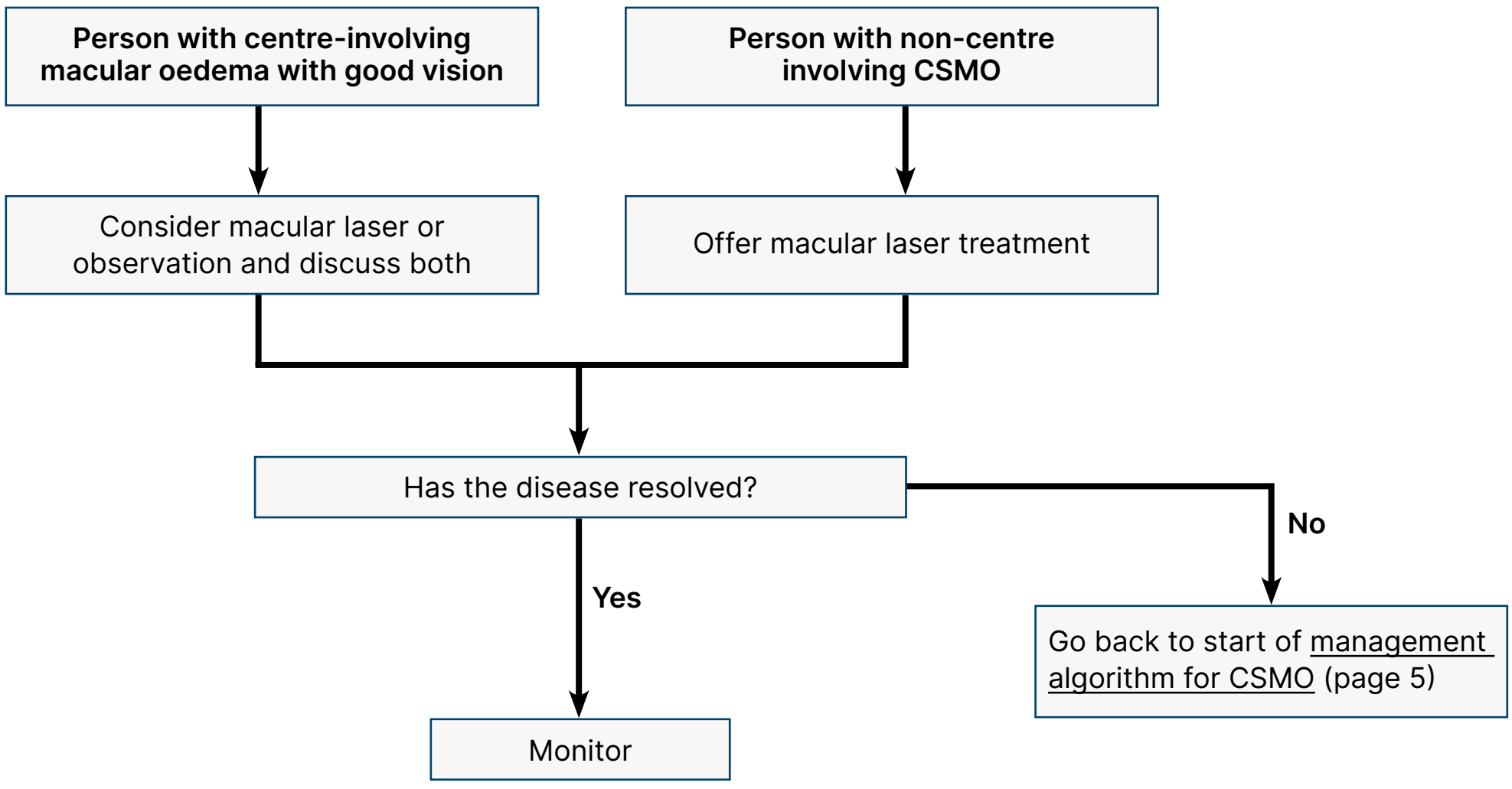
NICE technology appraisal guidance on medicines for treating visual impairment caused by DMO

Anti-VEGFs
See NICE's technology appraisal guidance on brolucizumab, faricimab, aflibercept and ranibizumab

Intravitreal implants
See NICE's technology appraisal guidance on fluocinolone acetonide and dexamethasone

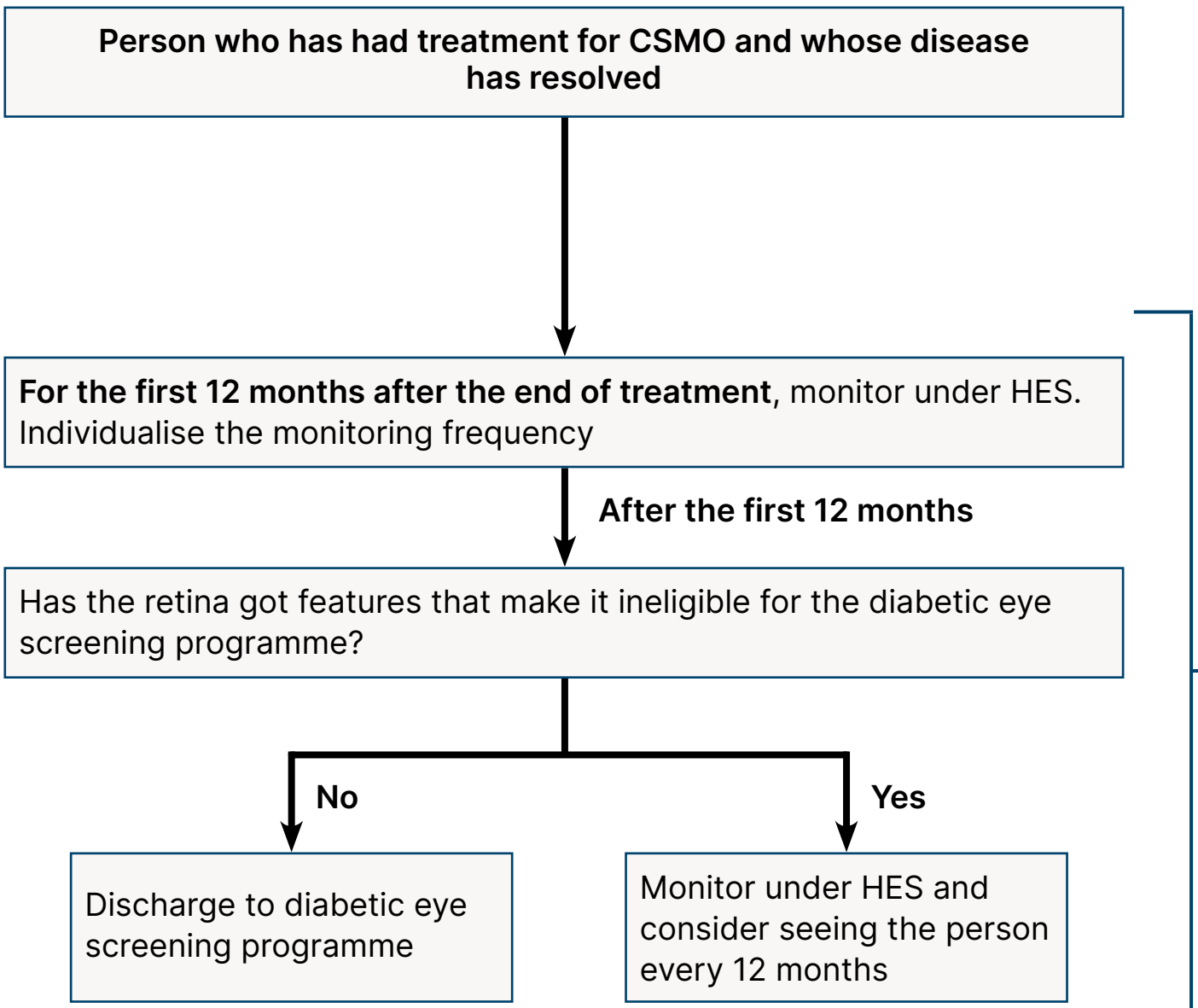
Last updated August 2024. ISBN 978-1-4731-5691-3.

Managing centre-involving macular oedema with good vision or non-centre involving CSMO (3 of 3)



Last updated August 2024. ISBN 978-1-4731-5691-3.

Clinically significant macular oedema (CSMO) Monitoring



If pregnant, see the section on retinal assessment during pregnancy in NICE's guideline on diabetes in pregnancy

Last updated August 2024. ISBN 978-1-4731-5691-3.

Definitions

Centre-involving diabetic macular oedema

Diabetic macular oedema that involves the central subfield of the Early Treatment Diabetic Retinopathy Studies (ETDRS) grid, which has a diameter of 1 mm. Centre-involving diabetic macular oedema is always clinically significant.

Clinically significant diabetic macular oedema

Diabetic macular oedema is clinically significant when any of the following signs are present, based on slit-lamp biomicroscopy with stereopsis:

- retinal thickening at or within 500 micrometres of the centre of the fovea
- hard exudation at or within 500 micrometres of the centre of the fovea with adjacent retinal thickening
- retinal thickening of 1 disc area or more within 1 disc area of the centre of the fovea.

Clinically significant non-centre-involving diabetic macular oedema

Clinically significant diabetic macular oedema that does not involve the central subfield of the Early Treatment Diabetic Retinopathy Studies (ETDRS) grid, which has a diameter of 1 mm.

Complete panretinal photocoagulation

Panretinal photocoagulation is complete when:

- all of the midperipheral retina and peripheral retina (from 2 disc diameters away from the fovea to the equator) has been treated with panretinal photocoagulation, leaving one-size burn space in between burns and
- for people whose PDR had remained active after this original treatment, additional 'fill-in' laser has been applied, if appropriate, adding burns in the spaces left by the original treatment.

Disease regression of proliferative diabetic retinopathy

Proliferative diabetic retinopathy regression is defined by:

- regression or disappearance of new vessels as seen on fundus examination or fundus imaging, or fluorescein angiography
- fibrosis developing in areas of new vessels
- absence of new vitreous or preretinal haemorrhages.

High-risk characteristics

High-risk proliferative diabetic retinopathy as defined by the Early Treatment Diabetic Retinopathy Studies (ETDRS) is characterised by neovascularisation:

- either on or within 1 disc diameter of the optic disc, greater than one-fourth to one-third disc area in size
- elsewhere in the retina, greater than one-half a disc area in size, with a preretinal haemorrhage or vitreous haemorrhage
- of any optic disc, with a vitreous or preretinal haemorrhage.

Macular laser treatment adjuvant to anti-VEGF

The use of macular laser in addition to anti-VEGF treatment when, following the loading phase, a person's eye has had a suboptimal response to anti-VEGF treatment alone (based on the definition for suboptimal treatment response).

Permanent damage

Damage such as photoreceptor cell loss, macular atrophy or lamellar macular holes. The time that it takes for permanent damage to occur can vary between different people.

Resolved macular oedema

Presence of isolated or sparse, small, intraretinal cysts with no other features as seen from optical coherence tomography (OCT) scans.

Suboptimal treatment response for diabetic macular oedema

Treatment response for diabetic macular oedema is suboptimal if there is:

- reduced vision as a result of diabetic macular oedema or
- increased diabetic macular oedema or
- no change, or increase, in retinal thickness related to diabetic macular oedema.

Visual impairment

78 ETDRS letters or less, or a Snellen acuity of 6 out of 9 or worse.

For more information, see NICE's guideline on diabetic retinopathy

Last updated August 2024. ISBN 978-1-4731-5691-3.