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Editorial on the consensus statement on diabetic retinopathy care pathway

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First of all, I would like to congratulate the UK DMO National Working Group for their achievements in updating the evidence on the management of diabetic retinopathy and diabetic macular oedema and bringing this task to fruition as a consensus statement, published as a supplement to this edition. The research outputs in this field has gained momentum over the last few years resulting in varying levels of evidence on many aspects of the care pathway including treatment modalities, treatment frequencies and monitoring options. Whilst care pathways are less challenging when robust Level I evidence is available, there is an unmet need for consensus statements on the current diabetic retinopathy care pathway because there are grey areas where evidence is lacking or contradictory.

This consensus statement provides an update on clinical guidance in the United Kingdom (UK) where the cost of treatment is free to the patients at the point of access in the National Health Service (NHS). Similar to the preferred practice patterns that are regularly published in Ophthalmology [1], these statements also provide the clinical standards for auditing each clinical service, serve as evidence of routine practice in medico-legal cases and inform commissioners (payors) of current treatment pathways.

There are number of areas within the care pathway that require changes based on emerging evidence. For example, the current NHS diabetic eye screening (DES) programme is a world-class programme but it is not cost-effective [2]. Recently, evidence from the UK has shown that running surveillance clinics with optical coherence tomography (OCT) integrated within screening services is indeed cost-effective [3]. However, this piece of evidence has to be

translated and integrated into clinical practice. Until such time, many ophthalmology centres are coping with the demand of referral of maculopathy patients by running virtual imaging clinics. The comparative cost-effectiveness of having OCT integrated to screening services versus virtual clinics utilising wide-angle imaging and OCT in secondary care remains to be evaluated.

Another grey area is that the current screening programme using two-field retinal photography is robustly developed and validated with seven-field retinal photography. However, recent evidence indicates the need for change. For example, wide-field imaging reveals more prognostic indicators of disease progression than seven-field imaging [4]; artificial intelligence incorporated automated grading is as good as human graders at identifying referable retinopathy [5]; mydriasis may be required only as a second stage if non-mydriatic imaging does not provide sufficient quality; and lastly, the emergence of affordable retinal cameras that can be used to capture retinal images in primary care centres that show comparable accuracy to seven-field retinal photography [6]. The emerging evidence justifies a re-evaluation of the current screening programme in many aspects but, until these changes are implemented in the NHS DES programme, summarising the emerging evidence in the consensus statement will provide the clinical guidance to effect change.

Another area that is controversial is the use of anti-VEGF therapy for proliferative diabetic retinopathy. Anti-VEGF therapy, although found superior to panretinal photocoagulation, is not cost-effective in eyes without concomitant macular oedema [7]. However, when these two conditions co-exist, a patient could be initiated on anti-VEGF and panretinal photocoagulation deferred until anti-VEGF therapy is withdrawn [8]. However, peripheral capillary non-perfusion does progress with time with either treatment option and so the choice of agent for each patient has to be individualised, bearing in mind that this group of patients may not attend eye clinics regularly due to other co-morbidities. Although panretinal photocoagulation remains

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the standard treatment for proliferative diabetic retinopathy, the consensus statement provides guidance to clinicians if such individualised treatment regimens are to be provided as a treatment choice to select few patients for personal reasons. The same principle also applies to the use of Level I evidence that anti-VEGF therapy in moderately severe and severe non-proliferative diabetic retinopathy to prevent sight-threatening complications.

Lastly, the consensus statement has also summarised all the treatment regimens used in diabetic macular oedema. A major area of controversial evidence in this field is the terminology of non-responder and whether switching to another therapy is at all necessary. Not all patients will respond with no macular fluid after three initial injections and there is sufficient clinical trial evidence that the macular fluid resolves in the majority of the patients with continued anti-VEGF therapy by 2 years whilst sustaining initial visual acuity gains. On the contrary, early switch is recommended based on the EARLY study despite DRCR Protocol U that shows no difference in visual outcomes between anti-VEGF monotherapy (ranibizumab) and anti-VEGF-steroid (Ozurdex) combination at 6 months after a course of monthly ranibizumab injections for 3 months [9, 10]. Here again, the consensus statement enables clinicians to personalise treatment regimens for diabetic macular oedema.

Monitoring patients with DMO on a regular basis also requires a review of the severity of diabetic retinopathy. As visual acuity shows only a modest correlation to macular fluid, home monitoring for this condition will be a challenge. The Amsler test is not a sensitive test for home monitoring as very few patients experience distortion due to diabetic macular oedema. Even if home-monitoring devices such as home OCT may be able to identify macular fluid, unlike age related macular degeneration, monitoring the retinopathy status is an additional challenge. However, given the recent progress in self-monitoring devices, I look forward to this disruptive innovation in future diabetic retinopathy care in the UK.

Compliance with ethical standards

References

1. Lum F, Feder RS, McLeod SD, Parke DW 2nd. The preferred practice pattern guidelines in ophthalmology. Ophthalmology. 2016;123:928–9.
2. Scanlon PH, Aldington SJ, Leal J, Luengo-Fernandez R, Oke J, Sivaprasad S, et al. Development of a cost-effectiveness model for optimisation of the screening interval in diabetic retinopathy screening. Health Technol Assess. 2015;19:1–116.
3. Leal J, Luengo-Fernandez R, Stratton IM, Dale A, Ivanova K, Scanlon PH. Cost-effectiveness of digital surveillance clinics with optical coherence tomography versus hospital eye service follow-up for patients with screen-positive maculopathy. Eye. 2019;33:640–7.
4. Silva PS, Cavallerano JD, Haddad NM, et al. Peripheral lesions identified on ultrawide field imaging predict increased risk of diabetic retinopathy progression over 4 years. Ophthalmology. 2015;122:949–56.
5. Ting DSW, Cheung CY, Lim G, et al. Development and validation of a deep learning system for diabetic retinopathy and related eye diseases using retinal images from multiethnic populations with diabetes. JAMA. 2017;318:2211–23.
6. Natarajan S, Jain A, Krishnan R, Rogye A, Sivaprasad S. Diagnostic accuracy of community-based diabetic retinopathy screening with an offline artificial intelligence system on a smartphone. JAMA Ophthalmol. 2019. https://doi.org/10.1001/jamaophthalmol.2019.2923
7. Sivaprasad S, Hykin P, Prevost AT, Vasconcelos J, Riddell A, Ramu J, et al. Intravitreal aflibercept compared with panretinal photocoagulation for proliferative diabetic retinopathy: the CLARITY non-inferiority RCT. Southampton (UK): NIHR Journals Library; 2018.
8. Sun JK, Glassman AR, Beaulieu WT, et al. Diabetic retinopathy clinical research network. rationale and application of the protocol S anti-vascular endothelial growth factor algorithm for proliferative diabetic retinopathy. Ophthalmology. 2019;126:87–95.
9. Gonzalez VH, Campbell J, Holekamp NM, et al. Early and long-term responses to anti-vascular endothelial growth factor therapy in diabetic macular edema: analysis of protocol I data. Am J Ophthalmol. 2016;172:72–79.
10. Maturi RK, Glassman AR, Liu D, et al. Diabetic retinopathy clinical research network. Effect of adding dexamethasone to continued ranibizumab treatment in patients with persistent diabetic macular edema: a DRCR network phase 2 randomized clinical trial. JAMA Ophthalmol. 2018;136:29–38.