Table 1 Mean baseline and follow-up questionnaire scores with percentage improvement and statistical significance using a paired Student *t*-test (*n* = 98)

Questionnaire domain	Mean baseline score	Mean follow-up score	Percentage improvement	Significance
Knowledge of AMD	5.69	6.94	22	<i>P</i> < 0.0001
Treatment of neovascular AMD	5.99	7.51	25.3	<i>P</i> < 0.0001
Risk factors and beneficial lifestyle changes	4.85	6.78	39.7	<i>P</i> < 0.0001
Use of an Amsler grid	3.01	6.85	127.5	<i>P</i> < 0.0001
External support services available	2.91	4.7	61.6	<i>P</i> = 0.0002
What to expect from the AMD service	7.6	8.43	10.92	<i>P</i> = 0.0002

significant increase in patient's knowledge in all six questionnaire domains (Table 1). The outpatient appointment and IVI record was useful in 85 (91.4%) and 78 patients (83.9%), respectively. All patients recommended this resource to other AMD patients.

The introduction of an easy-to-understand novel PHAR significantly improved patients' knowledge regarding a number of domains related to AMD and its treatment.

The Amsler grid remains an important tool for monitoring central vision despite patient non-adherence.⁴ The PHAR contains an Amsler grid with easy-to-follow instructions and, coupled with a significant improvement in understanding of its importance (127.5%), is expected to contribute to earlier detection of nAMD for the second eye.

Patients with chronic diseases benefit significantly from social support networks with improved overall functioning.⁵ Knowledge of available external support services improved by over 60% in this study. Thus, we expect this PHAR to contribute to this.

Patient knowledge of risk factors and protective factors in AMD is known to be poor. The PHAR improved patient knowledge by 40% in this area, allowing patients to make beneficial lifestyle changes to reduce the risk of progression of their AMD.

The implementation of a novel PHAR into the AMD service significantly improved knowledge regarding AMD. Better patient education improves clinical outcomes and patient engagement. Thus, the introduction of this PHAR will enable us to deliver these goals for patients with AMD.

Conflict of interest

Professor Downes has received, on behalf of the department, honoraria for speaking at meetings, and support for equipment and research from Novartis, Eli Lilly. Dr Shah has received a bursary from Bayer to support research. The authors declare no conflict of interest.

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Sir,

Comment on: 'Corneal confocal scanning laser microscopy in patients with dry eye disease treated with topical cyclosporine'

Corneal sub-basal nerve plexus morphology, epithelial, and stromal cellular changes in dry eye disease (DED) determined by in vivo confocal microscopy (IVCM) has been well documented. Despite a strong association between these changes to the severity of DED and its clinical relevance, its specific causal role towards DED pathogenesis is yet to be determined. In a recent report, Iaccheri B *et al.*,¹ have described favorable changes in cell density of the intermediate epithelium, sub-basal nerve features and keratocytes state by IVCM in DED patients over time who were on topical 0.05% cyclosporine ophthalmic emulsion treatment. These observations were in addition to decrease in DED signs and symptoms.¹ The findings are clinically relevant and interesting indeed, especially with the IVCM assessments during follow-ups. However, it is important to point out a few observations regarding the IVCM analysis based on the representative images shown in Figure 2 in the report by Iaccheri B *et al.*

The authors did point out the subtlety involved in IVCN imaging and analysis by referring to the importance of the unusual striking angles of the light rays from the confocal microscope that may influence the reflectivity of the cells and structures. Similarly, the depth and region of central cornea imaged will also greatly influence the analysis.² Along with varied patterns, the penetration density of the nerve plexus is known to be lower in the area around and inferonasal to the corneal apex.² Therefore, it is absolutely essential to ensure imaging at the same depth and region of central cornea during the follow-ups for a more accurate analysis. The other factor is with reference to corneal dendritic cell or Langerhans cell (cDC) density that is routinely assessed by IVCN. cDC density been well documented to be increased and associated with the severity of DED, and reduced during resolution of the disease.^{3,4} It is rather unique not to observe cDC in the representative images nor in the IVCN findings of DED patients in the report by Iaccheri *B et al.* Combined corneal sub-basal nerve plexus morphology and cDC density changes are being used effectively in monitoring the resolution of DED.⁵

Conflict of interest

The author declare no conflict of interest.

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**Sir,
Reply to Comment on: ‘Corneal confocal scanning laser microscopy in patients with dry eye disease treated with topical cyclosporine’**

We thank Dr Kumar¹ for the interest shown in our paper² and for the comment. Two points are emphasized. The

first one is in relation to the importance of ensuring that the same part of the cornea is evaluated sequentially in follow-up studies for accurate demonstration of change. This is correct but in practice difficult with *in vivo* confocal microscopy (IVCM) as the area scanned is very small and there are no fixed landmarks that can be used for reference in subsequent imaging. This is a limitation associated with all similar IVCN studies. However, one can ensure with reasonable certainty that the same quadrant is examined at each visit. Furthermore, the Heidelberg IVCN device (used in this study) has a side camera that monitors the area of contact of the objective with the cornea and provides images that can be used to examine the same area, as closely as possible, at subsequent visit. In this study¹ we confined our examination to the center of the cornea with the patient looking straight hence it is very likely that the same area or its close vicinity was examined at each visit and that the LC and DC had not migrated to the area of examination.

The second issue that was highlighted is that the images illustrated in our paper¹ do not demonstrate Langerhan’s (LC) or dendritic cells (DC). Both LC and DC are normally concentrated in the periphery of the corneal epithelium and stroma, respectively. Their number increase nonspecifically in inflammation and they migrate to the central area of the cornea. Changes in distribution and density of LC and DC do not directly correlate with nerve and keratocyte changes. The inflammatory component of dry eye disease (DED) can be variable and consequently changes in distribution and density of DC and LC can also be variable. When these changes are present they can be documented at the outset and response to treatment can be monitored. This study shows that they are not a consistent feature of DED as we did not see them in all patients. This also reflects the fact that DED is a heterogeneous group of conditions that we lump together under one diagnostic term. It is likely that DED of post-menopausal women, DED post laser refractive surgery, DED associated with collagen vascular disease and age related DED are not the ‘same’ condition and the pathological manifestation of disease is different. This could be another reason why we did not see LC or DC in this study.

Conflict of interest

The authors declare no conflict of interest.

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