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CORRESPONDENCE

Because we receive many more letters than we have room to publish we may shorten those that we do publish to allow readers as wide a selection as possible. In particular, when we receive several letters on the same topic we reserve the right to abridge individual letters. Our usual policy is to reserve our correspondence columns for letters commenting on issues discussed recently (within six weeks) in the BMJ.

Letters critical of a paper may be sent to the authors of the paper so that their reply may appear in the same issue. We may also forward letters that we decide not to publish to the authors of the paper on which they comment.

Letters should not exceed 400 words and should be typed double spaced and signed by all authors, who should include their main degree.

Assessment of non-mydriatic fundus photography in detection of diabetic retinopathy

SIR,—We were alarmed by the paper by Mr Robert Williams and colleagues extolling the accuracy and efficacy of non-mydriatic fundus photography in the detection of diabetic retinopathy (1 November, p 1140). Since the authors have cited our work on diabetic eye disease in Glasgow, and since their results are at variance with our own experience, we would like to give an account of our current practice with non-mydriatic fundal photography.

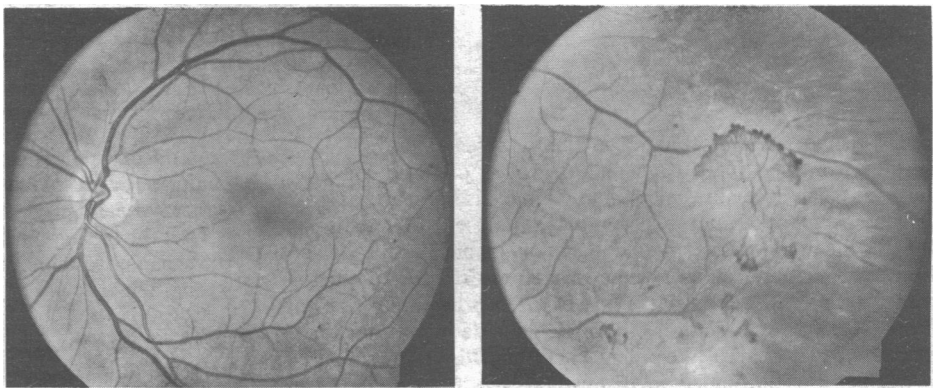
A Kowa fundus camera has been in routine use in our diabetic retinopathy screening clinic[1] since February 1986. This clinic is distinct from the general diabetic clinic, is staffed by diabetologists, and examines an average of 54 patients a week. Over the past nine months we have examined 1980 patients—that is, 3960 eyes—and have taken nearly 700 photographs using Polaroid colour prints or Kodak colour reversal film. The experience accumulated has led us to appreciate the limitations inherent in a non-mydriatic camera system.

Firstly, an adequate fundus photograph is obtained consistently only when the undilated pupil exceeds 4 mm in diameter. An appreciable number of patients have pupils smaller than this; the pupil in diabetics is often small and irregular. In an unselected diabetic population, with many elderly patients, the optical difficulties for the camera system are compounded by cataract: even minor lens opacities will obscure important photographic detail. These two factors combine to produce photographs which are spoilt or unsatisfactory in about 10% of patients examined. A camera operator using colour transparency film will be unaware of this failure rate before the patient leaves the clinic; his only alternative is to take additional Polaroid prints of every patient's eyes (the camera has interchangeable backs), which is both time consuming and expensive.

Secondly, and much more importantly, the non-mydriatic fundus camera cannot detect lesions in the peripheral retina. The lens covers a field of 45°—that is, the central retina just temporal to the macula—and just includes the lower and upper temporal vessels. It fails to detect new vessels in other parts of the retina. An example of the potential disaster inherent in reliance on the camera alone is given in the figure, which depicts two retinal photographs from the same eye of a young diabetic man with normal visual acuity. On the left is the standard non-mydriatic 45° retinal photograph; the eye appears virtually normal. The photograph on the right shows the peripheral new vessels in the same eye, which were undetected by the camera, were defined by direct ophthalmoscopy, and were subsequently treated by argon laser. It is particularly important that peripheral new vessels should be identified since such vessels progress to extensive surface membrane and traction retinal detachment, whereas new vessels on the disc are more likely to cause vitreous haemorrhage rather than a true diabetic traction retinal detachment.

Diabetic retinopathy is a common and serious disease. In our own experience with a large diabetic population,[1,2] its prevalence is about 30% and not as quoted by Mr Williams and colleagues. Five to 10% of diabetic patients with retinal lesions will have a serious ischaemic retinopathy (maculopathy or proliferation) which will cause blindness or gross visual handicap unless detected early and treated vigorously. Proliferative retinopathy is the reason why 16% of patients who develop type 1 diabetes in early life are blind after four decades of the disease[3]: most of these unfortunate patients are in early middle age and in the initial stages of their proliferative retinopathy would pass undetected by non-mydriatic fundus photography.

Our present practice is to confine the use of the non-mydriatic camera to patients in whom a retinal lesion has been detected that does not require treatment at that particular time but should be



Left: non-mydriatic 45° retinal photograph. Right: peripheral new vessels in the same eye detected on direct ophthalmoscopy.