

The CSO Cobra has been around for a couple of years now and always attracts attention. This may be the novelty of a fundus camera mounted on a slit-lamp table or simply the sleek, serpentine design from which it gains its name (Figure 1). I have to confess that when I tried the instrument a while back I had some concerns; image capture and manipulation were not as straightforward as they should have been and the final image quality was questionable. I also was keen to try out the meibography function but at the time I had the original instrument the instructions for using this were impenetrable. I was interested therefore to see the newest version of the camera, the Cobra HD, on display at the Grafton Optical stand at Optrafair and arranged for a trial to see if these concerns have been addressed. I can happily report that they have.

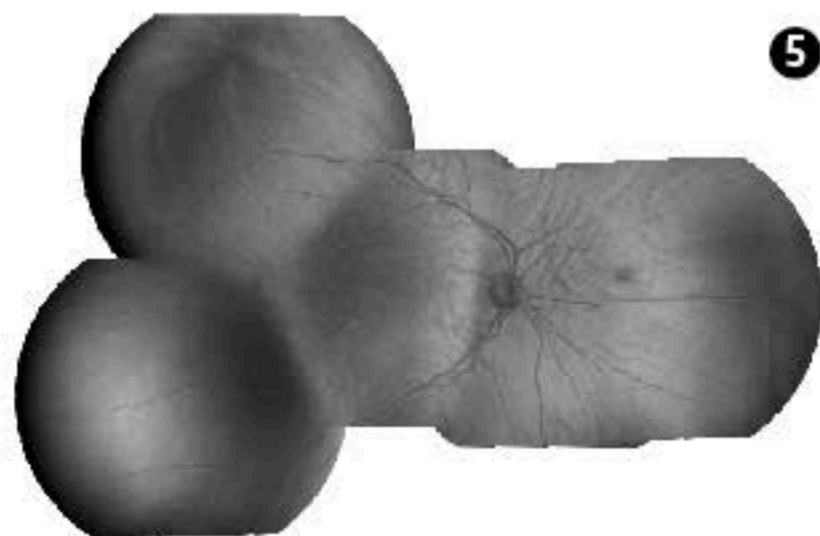
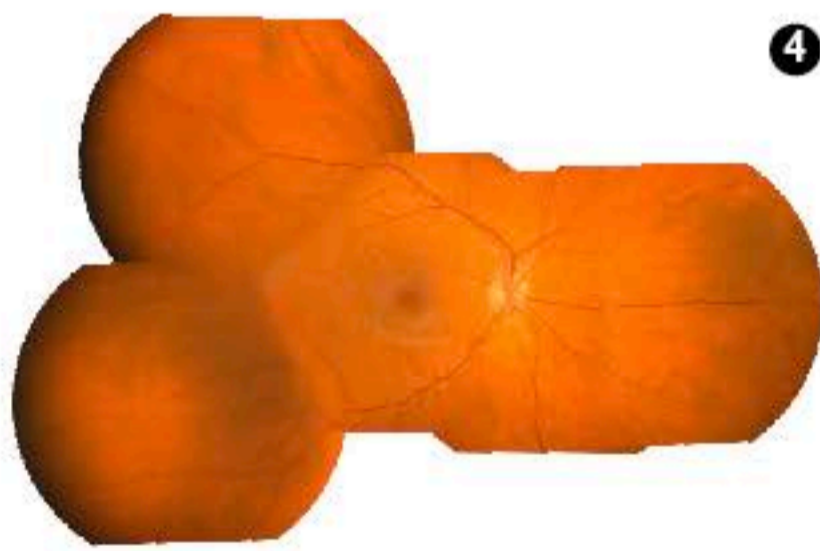
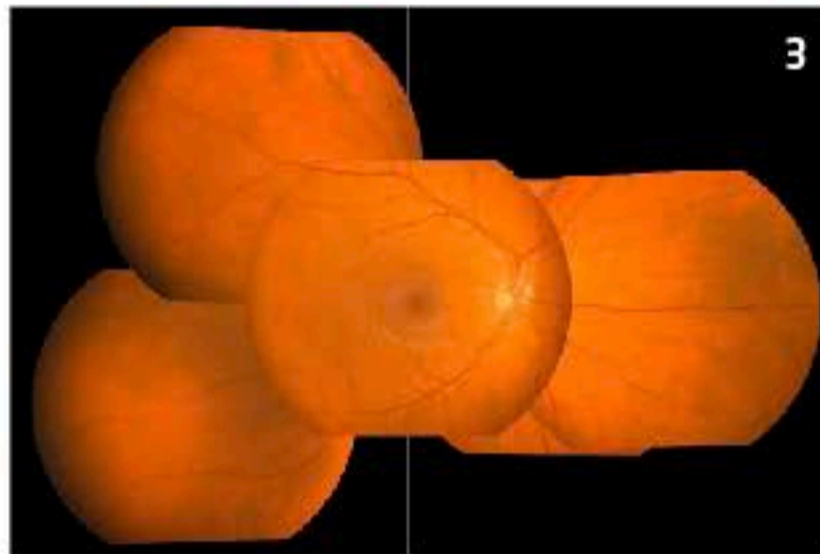
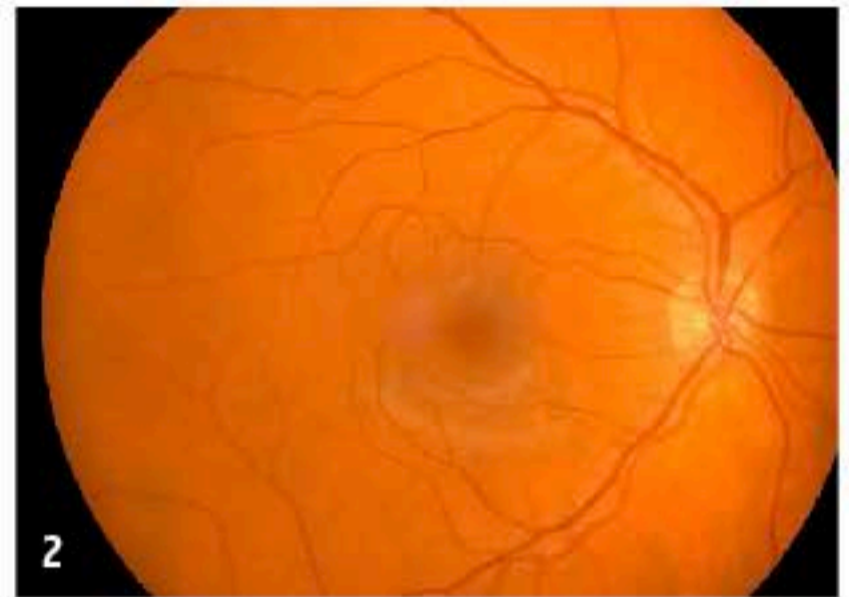
Cobra HD

The Cobra HD uses a two megapixel camera in combination with both a white and an infra-red flash along with capture software called Phoenix. Mounted on the slit lamp in the usual way, the camera may be used with either a Mac or PC. Positioning a distance from the patient allows good quality anterior imaging which would be perfectly acceptable for gross assessment or, for example, monitoring a lid or adnexal lesion, but in no way replaces the need for a slit-lamp camera system for magnified image capture. In capture mode, moving the camera toward the patient's pupil, which appears on screen soon, allows an image of the retina and the incorporation of coloured guides indicates when the correct position for capture is reached (the guides are green at this point). Fine tuning before capture is achieved by a small knob on the side of the instrument and accurate retinal image capture is now easy. A 60 x 45 degree image is easily obtainable through an undilated (3mm or more) pupil (Figure 2).

The camera also allows a mosaic image to be easily obtained. There is no internal fixation target for the patient (this is most likely why it has just been refused acceptance for diabetic screening purposes by the National Screening Committee) but an external target allows you to capture images for a variety of eye gaze positions (Figure 3). Pressing a button then blends these images

Charming images

In the first of a series of features taking a closer look at some of the instruments on show at this year's Optrafair, **Bill Harvey** puts the new Cobra HD through its paces



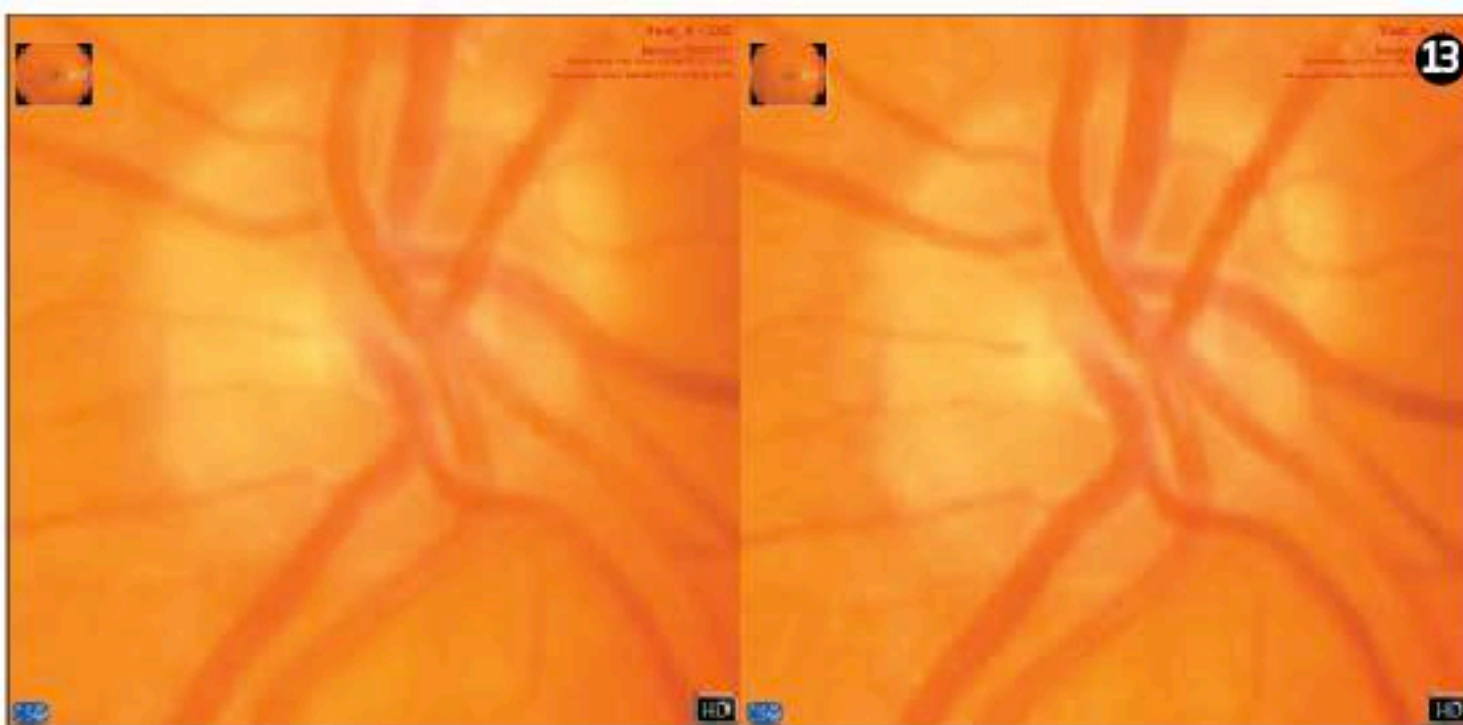
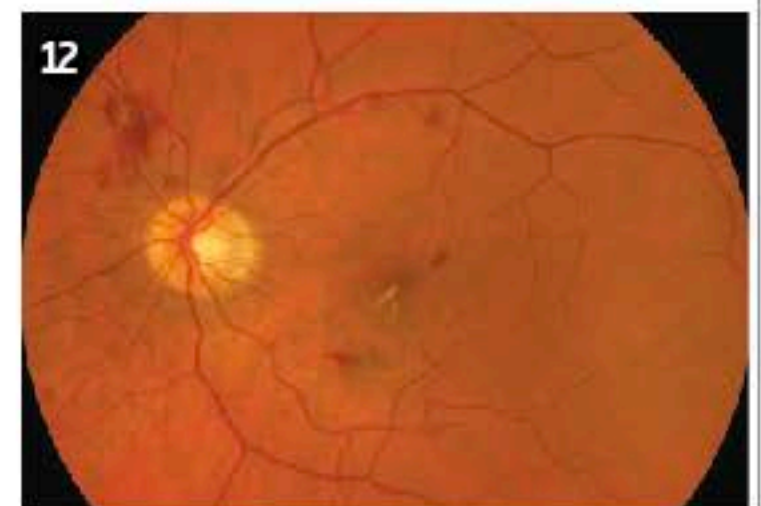
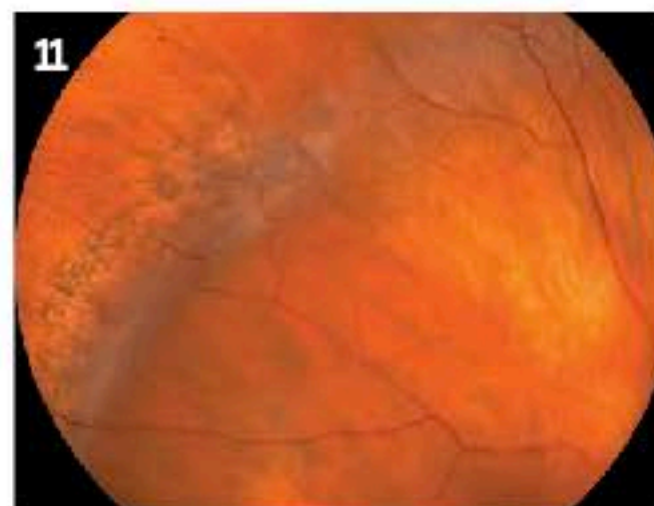
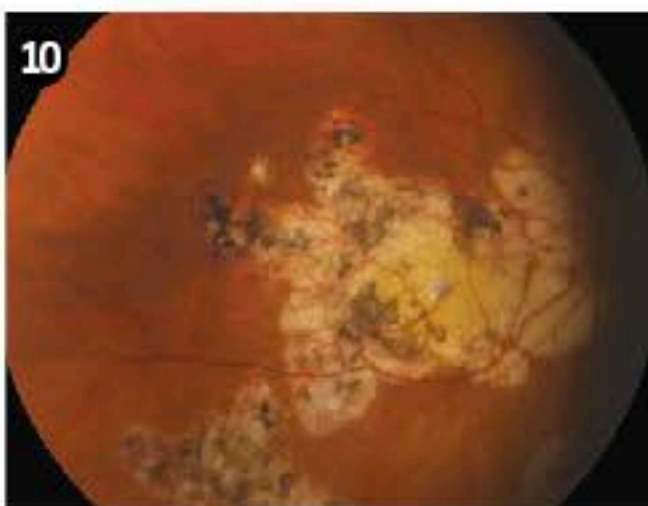
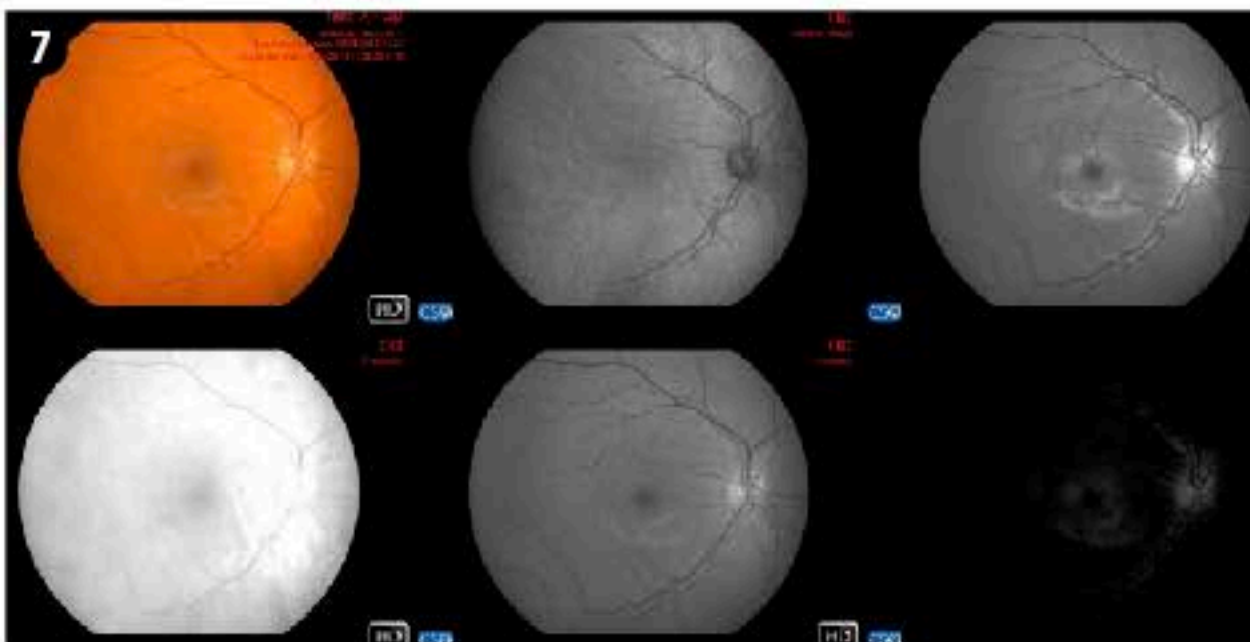
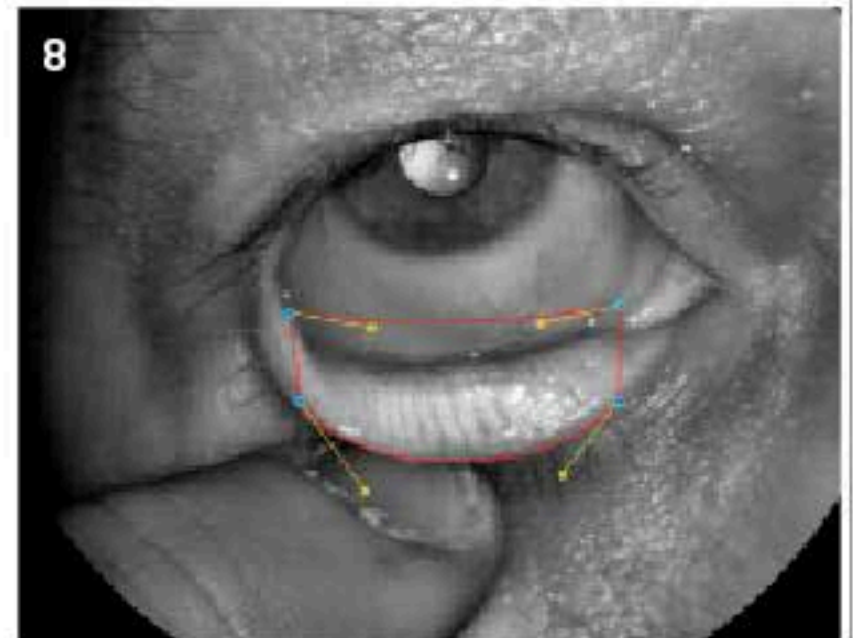
(Figure 4), allowing a much wider area of capture to be simulated. Infra-red capture is simultaneous – Figure 5 shows the same patient but with an IR image. Note how the vessels show up, especially the equatorial vortex veins in the top left of the image. Other more typical functions are available such as the ability to represent serial images for comparison (Figure 6). Furthermore, the images may be displayed selective to wavelength. Figure 7 shows such a composite image displaying (top row left to right) full colour, infra-red, red-free, and (bottom row left to right) images highlighting the choroid, vasculature and nerve fibre layer.

Meibography

Infra-red imaging exaggerates the appearance of the meibomian glands through the everted tarsal plate. Outlining these allows their total area to be calculated so identifying any glandular loss. This is now an easy option for the Cobra HD and might prove useful for anyone thinking of additional assessments for their dry eye clinic service. Firstly the anterior eye is focused and the lid everted (Figure 8). The image is then captured and you then outline the lighter areas that represent the meibomian tissue. The software then calculates the area of glandular loss (shown as red in Figure 9).

Verdict

I can safely say that anyone able to use a slit lamp will find image capture with the Cobra HD easy. Figure 10



patient to change fixation slightly I was even able to manage two slightly disparate images, allowing a stereo view (Figure 13; a 3D view is possible by defocusing when viewing the images side by side).

The Cobra HD is ideal if you want a fundus camera in the consulting room and have space on your slit-lamp table (perhaps you are getting rid of your keratometer?) and want to be in control of your own images rather than leaving it to pre-screeners. Or perhaps you want to supplement the image taken outside and can use it to inform the patient. Or maybe you want to use the meibography feature as part of an anterior assessment. In each case the new version of the Cobra is to be commended. ●

● Thanks to Grafton Optical for the loan of the Cobra HD. Further information from www.graftonoptical.com

shows a patient with chorioretinal scarring, Figure 11 shows how the far periphery may be attempted with careful patient instruction, while Figure 12 shows a gradable background diabetic retinopathy with

maculopathy. The lack of fixation target rules out the instrument for anyone wanting a camera to be used as part of the diabetic screening programme but is not a hindrance otherwise in my view. By asking the