

Optomap P200MA

■ Ultra-widefield imaging

Optomap P200MA (Figure 1) non-invasively generates an ultra-widefield digital image of the retina using a multi-laser scanning laser ophthalmoscope.

A field of view of up to 200 degrees, or up to 80 per cent of the retina, can be captured in a single image through undilated pupils¹. The device is intended to be used by eye-care professionals to aid in the diagnosis of retinal pathology¹.

Optomap uses red, green and blue lasers, reflected off a large concave elliptical mirror, to produce a digital, high-resolution image¹⁻². These laser wavelengths penetrate the retinal structures to different depths, with each wavelength providing information for interpretation and diagnosis. Images can be magnified, annotated and separated into their colour components to aid in diagnosis:

- The green laser separation (red-free) enhances the view of pathology within the retina and retinal pigment epithelium (RPE).
- The red laser separation aids in visualising the RPE and choroid.
- The red and green images are superimposed to produce a pseudo-colour image.
- Blue is used in fluorescein angiograms (not currently performed at CFEH).

Optomap has been shown to have excellent sensitivity at detecting retinal detachments, but is less sensitive at detecting retinal pathology anterior to the equator, such as holes, tears, or peripheral retinal degenerations²⁻⁴.

In a comparison of non-mydratic Optomap imaging to stereoscopic dilated fundus examination by a retinal specialist, Optomap imaging had a 94 per cent sensitivity and a specificity of 100 per cent of detecting more than mild non-proliferative diabetic retinopathy⁵. Optomap is also useful in documenting other retinal pathology, such as large choroidal lesions⁶.

While Optomap is designed to operate through a minimum pupil diameter of two millimetres, pupil dilation may enhance image quality. Views of the peripheral retina may be improved by having the patient look at a peripheral fixation target.

More useful images are produced by Optomap, compared to traditional fundus photography, when hazy media are present⁵. This is because the scanning laser approach provided by Optomap allows better media penetration.



Figure 1: Optomap P200MA.

A field of view of up to 200 degrees, or up to 80 per cent of the retina, can be captured in a single image through undilated pupils.

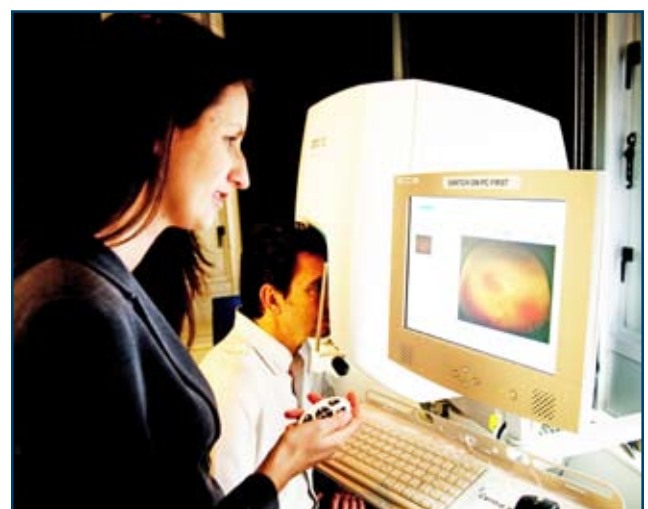


Figure 2: CFEH Principal Optometrist Paula Katalinic using Optomap to aid in the assessment of the retina.

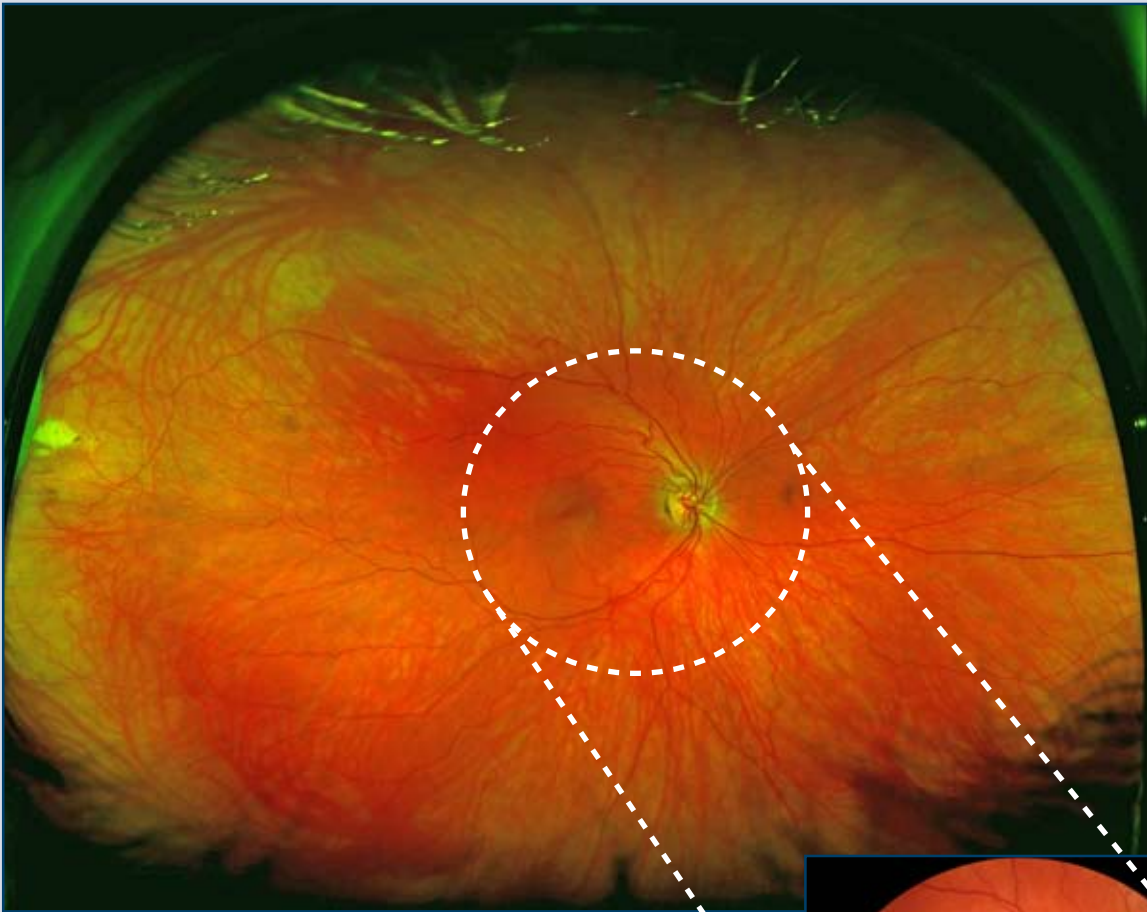


Figure 3: Optomap image area versus that of a conventional digital fundus photograph.

An Optomap image of the right eye through undilated pupils, with taping of the upper eye lashes, demonstrates the size of the Optomap field of view relative to a 45-degree digital fundus image (Figure 3). In the Optomap image, an area of chorioretinal atrophy is visible in the far temporal peripheral retina.



■ References

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3. Mackenzie PJ, Russell M, Ma PE, Isbister CM, Maberley DA. Sensitivity and specificity of the Optos Optomap for detecting peripheral retinal lesions. *Retina*. 07;27(8):1119-1124.
4. Cheng SC, Yap MK, Goldschmidt E, Swann PG, Ng LH, Lam CS. Use of the Optomap with lid retraction and its sensitivity and specificity. *Clin Exp Optom*. 2008;91(4):373-378.
5. Neubauer AS, Kernt M, Haritoglou C, Priglinger SG, Kampik A, Ulbig MW. Nonmydriatic screening for diabetic retinopathy by ultra-widefield scanning laser ophthalmoscopy (Optomap). *Graefes Arch Clin Exp Ophthalmol*. 2008;246(2):229-235.
6. Jain A, Shah SP, Tsui I, McCannel TA. The value of Optos Panoramic 200MA imaging for the monitoring of large suspicious choroidal lesions. *Semin Ophthalmol*. 2009;24(1):43-44.

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