

# Vivior Monitor: Objective data for selecting the optimal IOL

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Figure 1: Vivior Monitor and sensor



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A crucial encounter that defines the success of cataract operations and, more importantly, determines postoperative patient satisfaction takes place long before femtosecond laser docking, phaco tip activation or intraocular lens implantation in the capsular sac. This defining moment between doctor and patient takes place not in the operating room but in the consulting room, where more emphasis on a frequently neglected aspect of the preoperative conversation would be advisable. However, in-

novative technology can remedy this by introducing a whole new level of precision to the question of what – and how – the patient actually sees, whether at home, out and about, at work, or at hobbies. Before cataract surgery, and especially before deciding on a certain type of lens, it is essential to understand the patient's visual behavior in order to decide how to proceed. Of course, many doctor-patient consultations are impaired by the time restrictions of current medical practice. And time constraints affect our behavior as clinicians: following an examination, doctors are said to listen to their patients for an average of 30 seconds before interrupting to give advice on further treatment. But it is not only doctors who are to blame: every ophthalmologist knows that patients are often poor historians. And yet the surgeon needs to know details such as whether the patient is an enthusiastic smartphone user, or whether they

spend more time staring at a computer screen. Does the patient drive a lot, perhaps at night, or are they more of a bookworm? Even very sophisticated patients are often unable to shed much light on their daily visual habits.

This is the kind of information that can be obtained with the Vivior Monitor, which takes a revolutionary approach and enables highly personalized treatment solutions for cataract and refractive surgeons. The device is a sensor about the size of a USB stick that attaches to the rim of the patient's glasses. Inside is a range of miniature measurement instruments: sensors to measure distance, ambient light and color, an accelerometer, a gyroscope and a magnetometer. If the patient does not wear glasses, it can be used with the clear-vision glasses supplied. It does not contain a camera, so privacy is maintained for the patient and those around them.

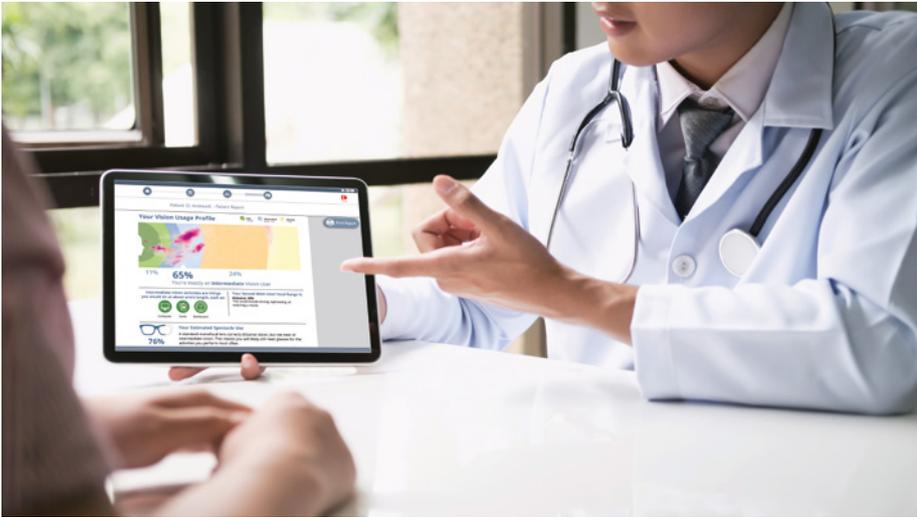


Figure 2: Vivior process visualization

Monitoring should take place over at least 36 hours, during which time the device, which weighs only 14 grams, collects data on viewing distance, light, orientation and movement during everyday activities (Figure 1). The individual visual behavior recorded during this time is analyzed by a cloud-based data processing system using AI algorithms, and the results are then delivered to the ophthalmologist as a graphic representation of the distribution of visual distances and the required diopters. The device also records how much time the patient spends looking at far, intermediate and near distances under photopic, mesopic and scotopic lighting conditions.

A Lifestyle Match Index<sup>®</sup> is then used to find the best fit between the patient's personal lifestyle and various IOL options and their respective optical advantages and disadvantages. A monofocal, bifocal, multifocal or EDOF lens, for example, can be selected based on the performance of an IOL design that is matched as closely as possible to the patient's visual behavior through video analysis (Figure 2). The ophthalmologist prints out a personalized report of the personal visual profile and hands it to the patient, which is in itself an important way of increasing understanding, cooperation and ultimately postoperative satisfaction.

This increased understanding of the complexity of available IOL designs and the postoperative situation – including an assessment of how frequently (or infrequently) glasses will need to be worn after optimal IOL selection – will enhance the patient's interest in and selection of premium lenses. These are used far too rarely given the number of patients who undergo this procedure. This is particularly true in the case of corneal astigmatism, which is common and often severe.

With the Vivior Monitor, the cost-benefit ratio of high-quality IOLs is more evident and better for patients to understand. It makes the decision easier for the patient as well as providing a reliable and realistic projection of their postoperative visual lifestyle.

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