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Visual Path Diagnostics with the KR-1W and CV-5000S: A Streamlined Workflow for Wavefront-Optimized Refraction

With increasing demands and expectations for comprehensive screening, eye care specialists often equip themselves with a wide array of tools and conduct numerous distinct diagnostic procedures. But the various processes involved in a comprehensive refraction do not need to be overburdening. Topcon's Visual Path Diagnostics workflow enables users to take advantage of an optimized process with the support of only two instruments.

Topcon's KR-1W Wavefront Analyzer offers five technologies within a single unit: wavefront aberrometry, topography, keratometry, pupillometry and autorefractometry with full auto-alignment and onboard evaluation software. The KR-1W also features wavefront image sequencing and simulated visual acuity assessment for optimal management of patients' data. The device's various tools can be used in combination to provide effective diagnoses and monitoring dependent on specific ocular conditions.

Topcon's CV-5000S Automated Vision Tester is an automated refraction device with a touchscreen interface that enables tests to be performed with ease. It features the added benefit of allowing users to record and share data digitally and paper-free, and can be connected to other devices so that data can be transferred between instruments and managed with efficiency.

Using the KR-1W Wavefront Analyzer in conjunction with the CV-5000S Automated Vision Tester offers an enhanced practice workflow through Topcon's Visual Path Diagnostics. Collectively, the two devices offer a comprehensive analysis of individual patient's refractive measurements, aberrations and corneal mapping, providing extensive data from the refractive properties of the eye for optimal care. Sharokh Kapadia, OD, FAAO and his team at St. John's Eye Associates have been using both devices regularly for routine eye examinations. Dr. Kapadia notes that the two devices—when integrated into the Visual Path Diagnostics workflow—allow the practitioner to obtain a broad overview of the patient's entire anterior segment while keeping the number of testing instruments to a bare minimum.



Topcon's KR-1W Wavefront Analyzer (behind) and CV-5000S Automated Vision Tester (front).

The Visual Path Diagnostics Workflow

Topcon's wavefront-optimized refraction process begins with using the KR-1W Wavefront Analyzer for aberrometry, topography, keratometry, pupillometry and autorefractometry. Using mire images, users can evaluate the ocular surface by determining good mires from poor ones. In the case of poor mires, users can proceed with an ocular surface disease work-up, while in the case of good mires, they can assess RMS values for mesopic and photopic refraction.

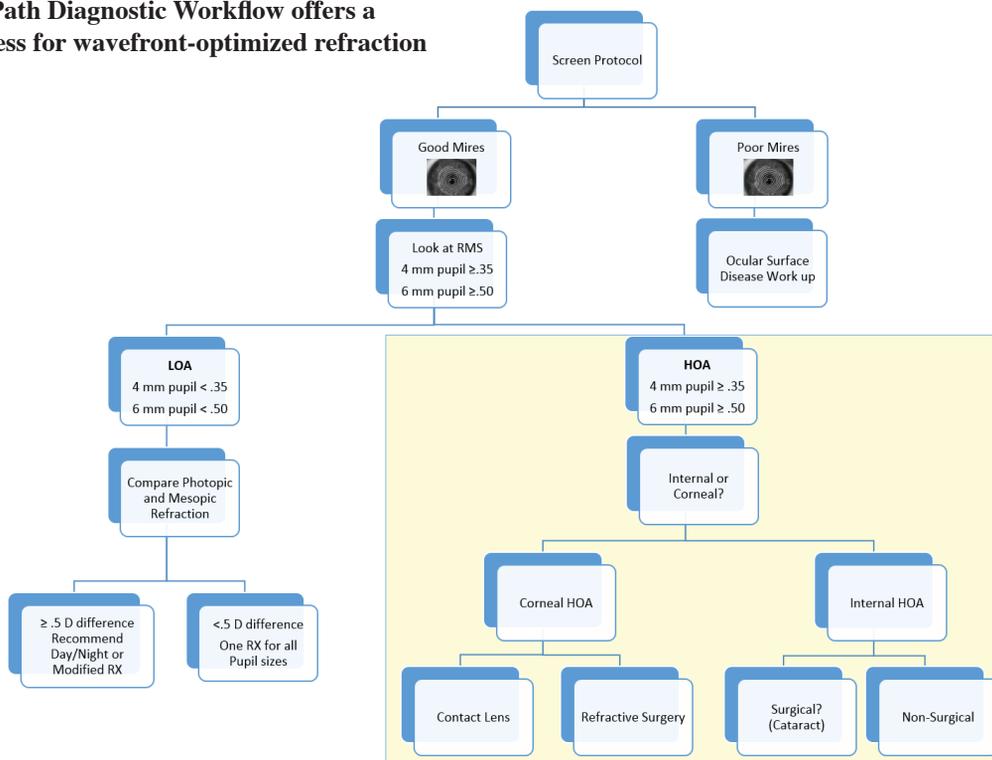
Following this, the workflow provides recommended thresholds for higher order aberrations (HOAs) for mesopic and photopic pupil conditions that can be evaluated from the wavefront function of the KR-1W. If the HOAs are below the recommended threshold in both light conditions, users can compare the mesopic and photopic refraction as well as confirm binocular balance. If there is a difference of 0.5 D or more between mesopic and photopic refraction, the workflow leads users to recommend day/night or

modified refraction. If there is less than 0.5 D difference, one refraction is recommended for all pupil sizes.

In the case of HOAs above the recommended threshold for the respective pupil sizes, the workflow indicates that refraction needs to be performed, which is conducted with the CV-5000S. During this portion of the procedure, patients are asked to subjectively express whether or not they are happy with the simulated targets. If they are happy, users may prescribe glasses or recommend treatment accordingly. If the patient is unhappy with the simulated targets, it is important to determine whether the HOAs are corneal or internal, which can be deduced from the KR-1W's capabilities as a topographer and wavefront aberrometer.

Using this method, if corneal irregularities are found, users can recommend contact lenses, or send the patient for further testing to determine if they are a candidate for refractive surgery. If the wavefront-optimized refraction leads users to identify internal HOAs, users can refer the patient to a refractive surgeon for surgical (refractive lens exchange) and non-surgical treatment options.

Topcon's Visual Path Diagnostic Workflow offers a streamlined process for wavefront-optimized refraction



Building the Practice with Efficiency

Whether starting out in a new practice or developing an established one, Topcon's Visual Path Diagnostics workflow with the KR-1W and CV-5000S can aid practice development and help to build patient throughput.

The entire workflow involves only two devices in the pre-testing phase, offering financial savings as well as the added benefit of lower space consumption in the examination room. Another significant advantage of having the entire workflow functional through only two devices is the requirement for fewer individual tests, saving time and improving patients' level of comfort.

“With Topcon’s workflow and its devices, we don’t need to have the patients sit at multiple instruments to obtain all the measurements.”

*Sharokh Kapadia, OD, FAAO
St. John’s Eye Associates*

Dr. Kapadia remarks: “Prior to having the KR-1W in our practice, we had separate instruments for topography, wavefront aberrometry and other tests, which cost a lot of time for staff and patients. With Topcon’s workflow and its devices, we don’t need to have the patients sit at multiple instruments to obtain all the measurements. This is why I think the KR-1W is such a huge practice builder. And it’s very important for your patients to know that you have good technology that it’s there to benefit them.” Correspondingly, satisfied patients can lead to an increase in word-of-mouth referrals, enabling practices to acquire new patients.

Moreover, Dr. Kapadia foresees significant changes occurring in healthcare in the near future: “I think that over the next decade we’re going to have to start seeing more patients more efficiently, so we’re going to need diagnostic instruments like the KR-1W to manage that workflow.”

Enhancing Patient Comfort and Education

Enabling patients to gain a comprehensive understanding of their respective conditions is intrinsic to successful consultations. When it comes to eye examinations, Dr. Kapadia emphasizes the importance of patient education, which can be facilitated by the streamlined workflow and the visual functionalities of the devices. Using a monitor connected to the KR-1W and CV-5000S, Dr. Kapadia can visually demonstrate various ocular conditions so that patients can understand them better: “*You* can be the person that’s educating a patient prior to sending them to an ophthalmologist, showing them what their ocular conditions are and explaining why a particular lens or surgical treatment would be ideal for them.”

Patient education goes hand in hand with patient comfort, and Dr. Kapadia praises the KR-1W for its capabilities in obtaining vast amounts of data within a single acquisition during the pre-testing phase. He argues that having all the objective data from the KR-1W upfront (rather than ordering individual tests following subjective refraction) is hugely beneficial: “It means you can really zero in on what needs to be taken care of.” In turn, Dr. Kapadia argues, practitioners can spend more quality time with their patients, communicating with them and visually demonstrate how their ocular conditions affect them and how they can be treated.

There are numerous values inherent in both subjective and objective refractive testing methods that point towards an integration of the two for optimal visual care. With vision testers, users can acquire subjective refraction based on individual patients’ own perceptions—a vital component to successful diagnosis and monitoring of patients’ refractive conditions. Concurrently, acquiring objective refractive properties can be successfully achieved by means of wavefront aberration analysis, topography and pupillometry, enabling improved diagnoses and monitoring of refractive conditions. Used in combination within the Visual Path Diagnostics workflow, the CV-5000S and the KR-1W offer a streamlined process for wavefront-optimized

refraction, enabling practitioners to conduct examinations quickly, efficiently and comprehensively. The workflow guides practitioners through the diagnostic processes in a way that maximizes the quality of examinations and consultations while minimizing the quantity of instruments and time.

Zara Barlas is a media and communications consultant who has specialized in writing about medical device technologies for 11 years. She has worked extensively with key opinion leaders worldwide to provide editorial support in the fields of ophthalmology and optometry.

Topcon's CV-5000S/KR-1W Package



The Complete Refraction Solution offers:

- Quantitative and Qualitative Vision Analysis
- Fully networked system saves you time and eliminates the need to manually enter refraction data
- Quickly identify those patients who may benefit from glasses for better night time vision
- Assess your patient's tear film break up

PERFORMANCE
YOU CAN COUNT ON

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