Humphrey Field Analyzer HFA3: Improving on a Standard

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The Humphrey Field Analyzer was first launched in 1984 as a means of automating the accurate yet arduous Goldmann manual kinetic perimetry test used to measure defects in the visual field. Over the years, the HFA has become the standard method used to assess and monitor visual field loss. Over 45,000 units are in use worldwide, providing clinicians with a standard platform for measuring, analyzing and communicating test results.

In preparation for the launch of HFA3, Carl Zeiss Meditec (Dublin, CA) placed evaluation units in 19 sites in the US for use with patients over a several month period. SM2 Strategic was asked to survey doctors and technicians at these sites and report on their early impressions of the new platform. 28 users (12 doctors, 16 technicians) completed an online survey at the end of the evaluation period; the summary of findings is shown below.

Figure 1: Humphrey Field Analyzer: Innovation Across the Decades

	HFA	HFA II	HFA II-i	HFA3
Introduced	1984	1994	2001	2015
Models	600 Series	700 Series	700-i Series	800 Series
Major Innovations	Goldmann Stimulus Threshold Testing STATPAC	Compact Size SITA Gaze Tracking	SITA with STATPAC Guided Progression Analysis Combined Reports	SmartTouch Interface RelEye Monitor Liquid Trial Lens
In a word...	*Standards*	*Speed*	*Analysis*	*Workflow*

Evolution of a Standard

When first introduced to glaucoma specialists, the HFA was a breakthrough due to its ability to standardize the way a perimetry test was conducted and then analyzed. The use of a microprocessor-based device that could be programmed to do a complete analysis of the central 30 degrees of the visual field (while varying the brightness and placement of a Goldmann stimulus) was an early form of automation within ophthalmology. With the addition of software that could statistically analyze a test and compare it to a database of normal eyes (STATPAC), the HFA forever changed the way that glaucoma patients were diagnosed and managed.

Over the last three decades, the platform has continued to evolve, becoming smaller in size, faster in test speed and easier for physicians to interpret results. With each improvement in hardware and/or software, the HFA has become increasingly indispensable as a tool to assess functional vision. An overview of the major innovations offered by each generation of the HFA platform is shown in Figure 1.

HFA3 is the third generation in this product evolution, intended to address the never-ending quest for efficiency within a busy practice. The new platform is designed to address workflow, making tests easier for technicians to setup and administer, and making it easier for doctors to access and analyze data. The HFA3 addresses many of the limitations experienced in earlier versions of the device. A more responsive touchscreen, improved eye tracking monitor, and the introduction of an automatic trial lens (Liquid Trial Lens) are the major hardware features of the new platform. In addition, data collected on the new platform are compatible with test results from earlier generations of the HFA. Numerous comments from the survey underscore the importance of saving time with each and every patient encounter. "The new HFA is much easier to set up and use. It cuts down time for our technicians, especially with the liquid lens," according to one of the doctors in the survey. An office manager at another clinic noted that "less staff time spent on the 'little things' is an obvious benefit." Users of ZEISS FORUM note a marked improvement in data exchange between the unit and its interface with FORUM Glaucoma Workplace, allowing PC-based analysis of results. One technician, who appreciated the improved reliability in eye tracking, summarized by saying "HFA3 is all around a better idea."

First Impressions

In this survey group, highest consideration in evaluating any new diagnostic tool is given to quality (75% of respondents), innovation (50%) and price (36%). The users at the evaluation sites have given high marks to the HFA3, with 75% saying their first impressions have been very positive and 25% somewhat positive. Four in five users (78%) were impressed with the Liquid Lens Technology, with two-thirds of users rating highly the SmarTouch Interface and the RelEye Monitor for Gaze Tracking. Just under half (46%) gave similar ratings to the FORUM Glaucoma Workplace.

Written positive comments referred to the new modern look and feel of the unit, overall improved ease of use, and

how the above hardware features make it a better overall experience for technicians and patients. Overall, these new features combine to allow for faster workflow and the elimination of steps (e.g., having to go to another room to get a trial lens) that eat up precious minutes during a busy day in clinic.

When asked what HFA3 features did not meet expectations, the highest response was “nothing” (38%). The Liquid Trial Lens was simultaneously both favored and disappointing to 6 of the 28 users, which is to be expected for a novel technology whose goal is to increase reliability and save time. Several comments referenced limitations inherent with visual field testing itself (e.g., blind spot mapping). The validation site users also provided feedback that they would like to see greater functionality in the user interface (e.g., addition of a "go back" button).

As a means of gaining insight into specific benefits of HFA3, survey users were asked to rate their level of agreement with a series of statements about the platform, ranging from Strongly Agree to Strongly Disagree. The use of a five-point scale provides an efficient means of determining how well the platform is perceived and the intensity of agreement. Overall, there was almost no disagreement, with only one respondent on one statement indicating such. The results of this section of the survey are shown in Figure 2.

Summary: The Decision to Upgrade

Without question, the HFA3 is a much needed redesign of a product that has succeeded by evolving over the past 30 years into the dominant standard in automated perimetry. While there is no additional reimbursement and the visual field test itself is not faster, practices need to recognize that newer often means better in ways that make clinics run smoother and faster. While more difficult to quantify, easier training for new technicians and faster setup and administering of visual fields are of definite value. And the modern unit will integrate better with the growing “digital infrastructure” required (e.g., FORUM) and future advancements in analytics across devices (HFA and OCT).

Is HFA3 a need or a want? We asked this question in the survey and found that for one-half of the survey sample “want” outweighed “need” by a margin of 11 to 3. The other half of the sample indicated it is equally both a need and a want. The "bottom line" sentiment can be found in the two questions regarding the decision to upgrade: 79% indicate they will recommend their own clinic upgrade and 93% would willingly recommend other practices upgrade to HFA3. For practices seeking even greater efficiency and the opportunity to incorporate the latest feature set in their management of glaucoma patients, HFA3 makes sense.

Figure 2: User Impressions on HFA3 Among Evaluation Sites

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The HFA3 is a significant improvement over HFA II-i	36%	60%	4%		
The workflow using HFA3 was noticeably faster for technicians to complete	39%	46%	15%		
The overall experience in HFA3 was more comfortable for patients	21%	54%	25%		
The ability to access data is easier because of the HFA3	43%	39%	18%		
The ability to analyze data is easier because of HFA3	41%	52%	7%		
The user interface is easier for technicians to administer tests	42%	54%	4%		
The Liquid Lens technology is a significant improvement over the trial lens	43%	35%	18%	4%	
I recommend our clinic/practice upgrade to the HFA3	29%	50%	21%		
I would willingly recommend the HFA3 to my colleagues at other practices	37%	56%	7%		

(N = 28, 12 = Ophthalmologist/Optometrist, 16 = Technician/Administrator)