

HFA II-*i* with Guided Progression Analysis™ (GPA)

Sample Cases



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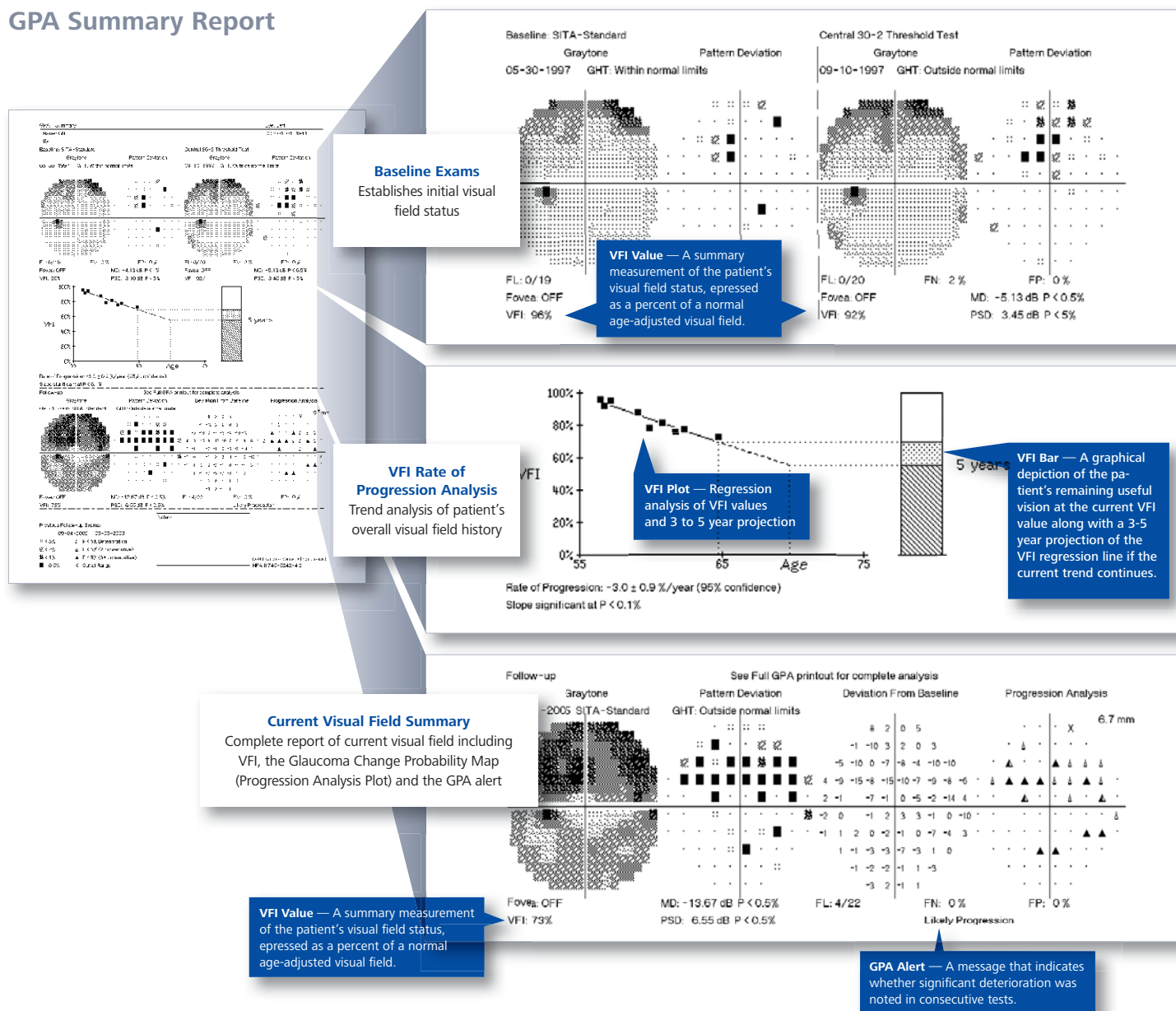
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Part I. Introduction

Now you can determine the stage of disease and the rate of progression, and assess your patient's risk of future vision loss—all at a glance. The Humphrey Field Analyzer II-i with new Guided Progression Analysis™ (GPA) software delivers current exam results, trends the entire visual field history and projects future vision loss all on a single page. The new GPA Summary Report presentation format is designed to simplify and streamline clinical interpretation.

GPA Summary Report



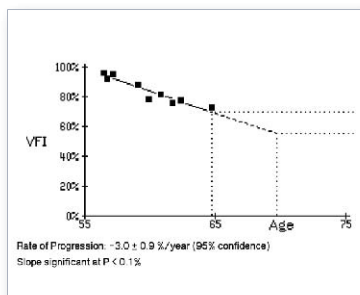
GPA uses the Visual Field Index™ (VFI), a new summary measurement of visual field status expressed as a percent of a normal age-adjusted visual field. Pioneered by Boel Bengtsson, PhD¹ as a more intuitive assessment of visual function, VFI is optimized for progression analysis. VFI is center-weighted to correlate with ganglion cell density and visual function. It is less affected by cataract and other media changes compared with earlier indices. On the new GPA Summary report, VFI is used to quantify rate of progression, where it is plotted relative to patient age to calculate the rate of functional loss. This brochure provides an overview of the new GPA Software for the HFA II-i and some real life case examples showing how VFI is used in GPA.

Part II. Understanding the new GPA Summary Report

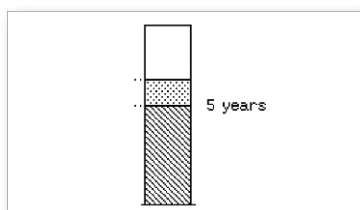
The new GPA Summary report is a powerful one-page report that provides an overview of the patient's entire visual field history. The report can be divided into three sections: the Baseline Exams at the top, the visual field history and trend in the middle, and the current exam at the bottom. Elements of each section are described below.

GPA Baseline Exams

At the top of the report are the Baseline Exams. Graytone and Pattern Deviation Plots are shown for both GPA Baselines, along with key indices such as VFI, MD, and PSD. By default, the oldest two exams of the same type are automatically selected as baseline. Then the initial selection of a SITA Standard or a SITA Fast exam determines which exams will be included as follow-up exams. It is critical that you ensure that tests included in the Baseline are representative of the patient's actual Baseline status. SITA Standard and SITA Fast exams cannot be combined in the GPA analysis. Also, GPA supports Central 30-2 and 24-2 tests in the same analysis, but when combined, GPA will analyze all tests as if they were 24-2 tests. GPA does not support FastPac tests or Central 10-2 tests for either Baseline or Follow-up.



VFI Plot



VFI Bar

VFI Plot

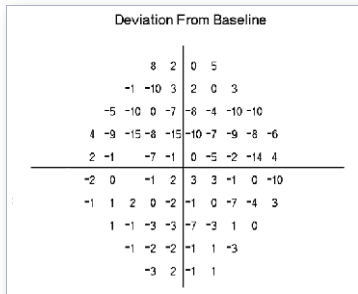
In the center of the report the VFI Plot graphs the VFI values of all exams included in GPA analysis as a function of the patient's age. The VFI Plot also provides a linear regression analysis of the VFI over time when appropriate. A minimum of 5 exams over 3 years or more must be included in GPA for the linear regression results to be presented.

Note: The regression line slope may be positive due to statistical uncertainty or the Learning Effect.

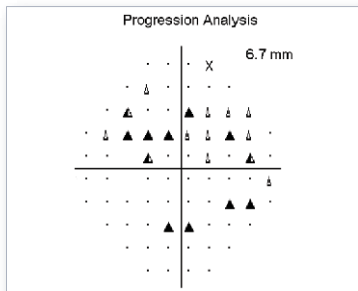
VFI Bar

To the right of the VFI Plot is the VFI Bar, a histogram that indicates the patient's current VFI value. In addition, when the results of the regression analysis are displayed, the VFI Bar will also graphically indicate the 3 to 5 year projection of the linear regression line, shown as a broken line. The length of projection is equal to the number of years of GPA data that is available, up to a maximum projection time of 5 years.

¹ A visual field index for calculation of glaucoma rate of progression.
B Bengtsson and A Heijl Am J Ophthalmol, Feb 2008; 145(2): 343-53.



Deviation from Baseline Plot



Progression Analysis Plot

Deviation from Baseline Plot

The Deviation from Baseline Plot compares the pattern deviation of the Follow-up test to the average of the pattern deviation values of the two Baseline tests, and indicates changes at each tested point, in dB notation.

Progression Analysis Probability Plot

The Progression Analysis Probability Plot gives the statistical significance of the decibel changes shown in the Deviation from Baseline Plot. It compares the changes between the Baseline and Follow-up exams to the inter-test variability typical of stable glaucoma patients and then shows a plot of point locations, which have changed significantly.

Points that have changed by more than the expected variability are identified with a simple and intuitive set of symbols:

- A **single, solid dot** indicates a point not changing by a significant amount.
- △ A **small open triangle** identifies a degree of deterioration expected less than 5% of the time at that location in stable glaucoma patients ($p < 0.05$).
- ▲ A **half-filled triangle** indicates significant deterioration at that point in two consecutive tests.
- ▲ A **solid triangle** indicates significant deterioration at that point in three consecutive tests.

An X signifies that the data at that point was out of range for analysis. For data that is out of range, GPA cannot determine whether or not the encountered deviation at that point is significant. This occurs mainly with field defects that were already quite deep at Baseline, such that even the maximum available stimulus brightness is within the range of normal variability, but can also occur when the measured threshold is higher than the Baseline.

GPA Alert

The GPA Alert is a message in plain language terms that indicates whether GPA progression criteria was met. The GPA Alert assists you in recognizing deterioration in consecutive tests. Note that the GPA Alert pertains to the eye as a whole, not to specific points in the visual field. In cases where three or more points show deterioration in at least two consecutive tests, the progression analysis indicates “Possible Progression.” In cases where three or more points show deterioration in at least three consecutive tests, the progression analysis indicates “Likely Progression.” When neither of the foregoing conditions applies, a message of “No Progression Detected” is displayed.

- 1 "Likely Progression"
- 2 "Possible Progression"
- 3 "No Progression Detected"

GPA Alert – 3 Possible Alerts

Part III.
Sample Case 1
Slow Progression

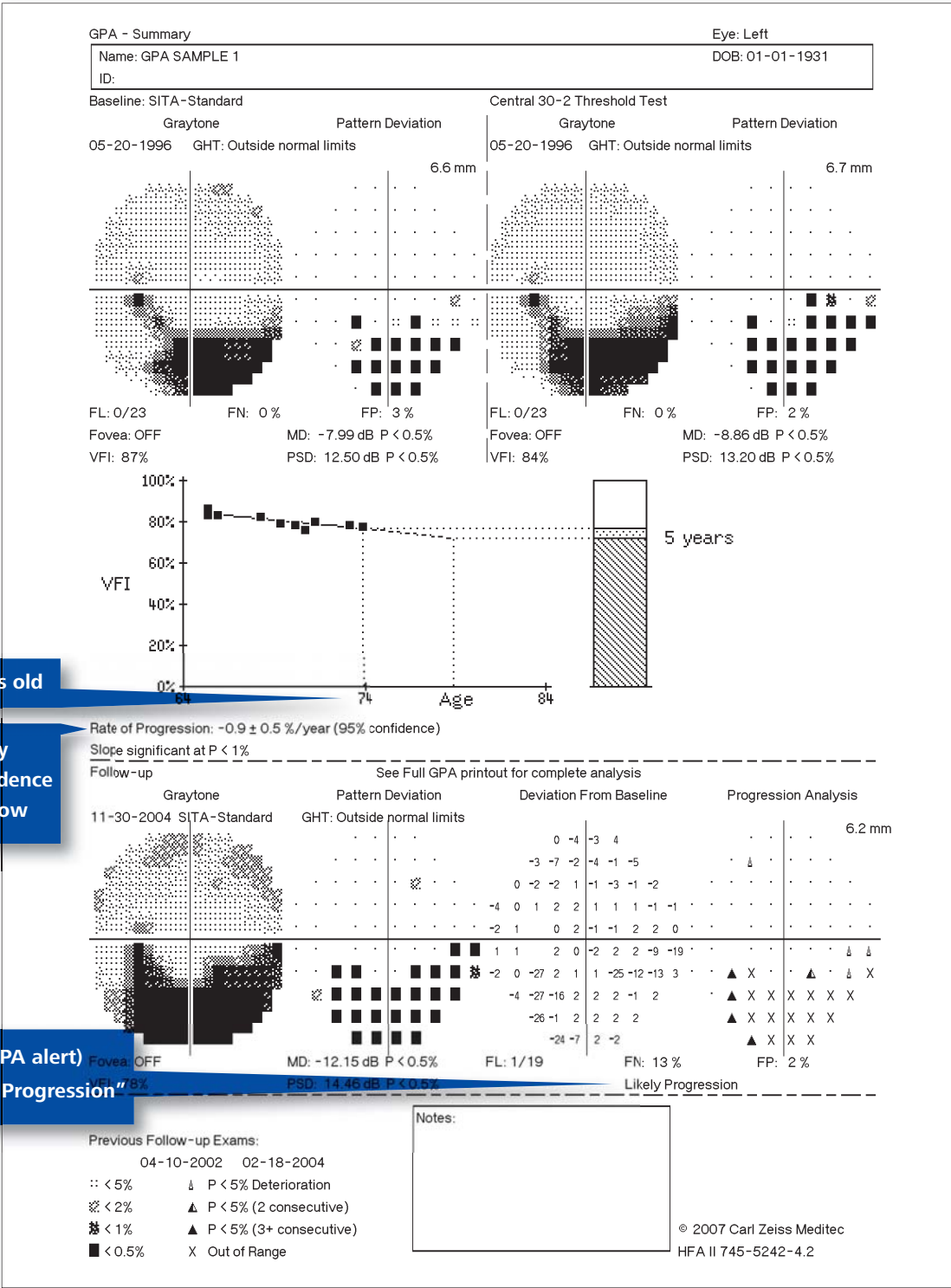
Slow progression may not necessarily be vision threatening

This is an example of a slowly progressing patient. The event analysis (GPA alert) indicates "Likely Progression". However, the VFI slope is nearly flat and the confidence intervals are narrow. This patient is measurably progressing (based on the change probability map) but only very slowly, and may not be at significant risk of visual impairment during his lifetime.

Patient is 74 years old

VFI slope is nearly flat and the confidence intervals are narrow

Event analysis (GPA alert) indicates "Likely Progression"

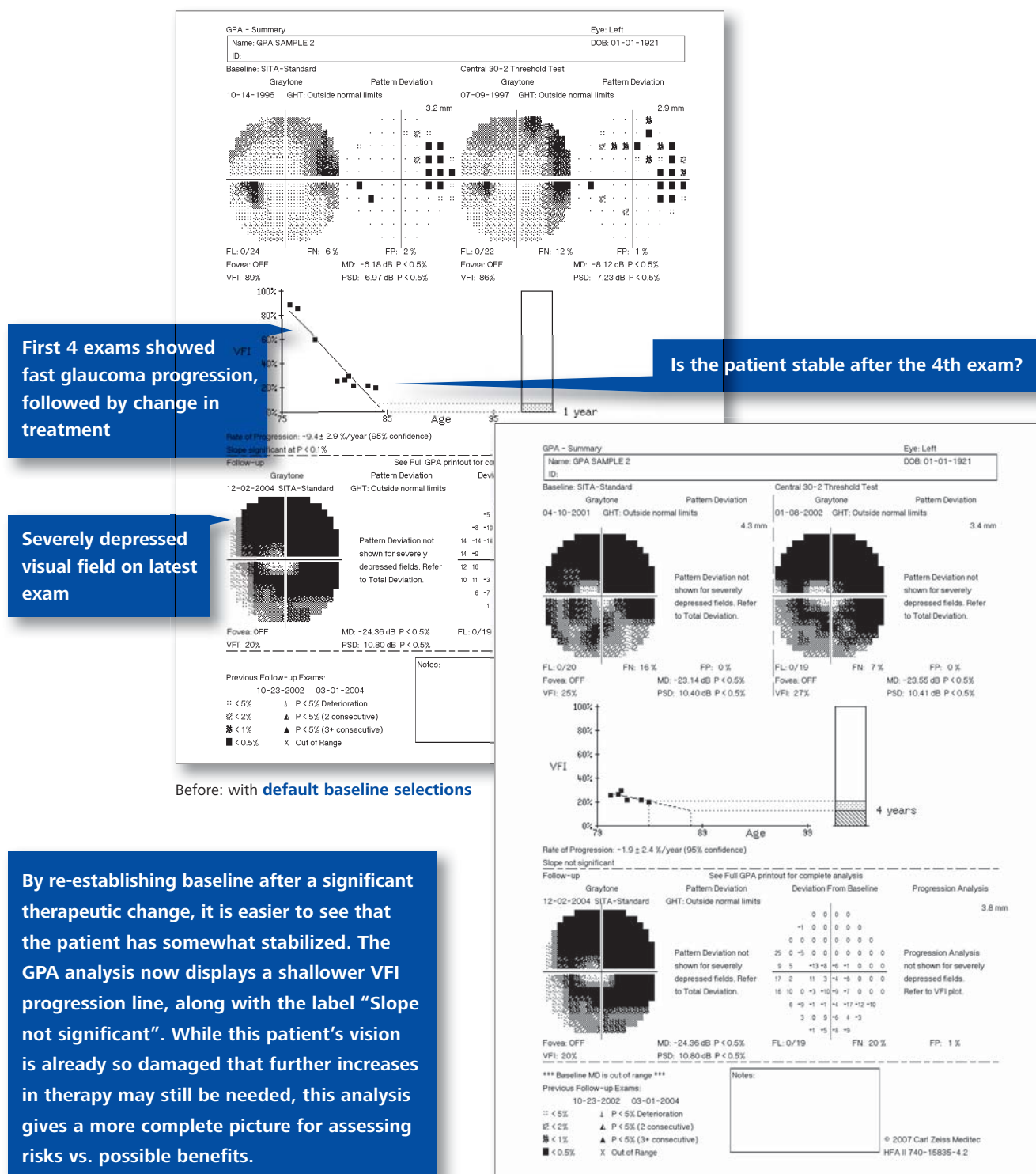


Part III. Sample Case 2

Resetting the baseline

Updating baseline after significant treatment change

The first four exams showed fast glaucoma progression, followed by a change in treatment. The exams post-treatment are severely depressed, and it is not clear whether the patient stabilized after the fourth exam.



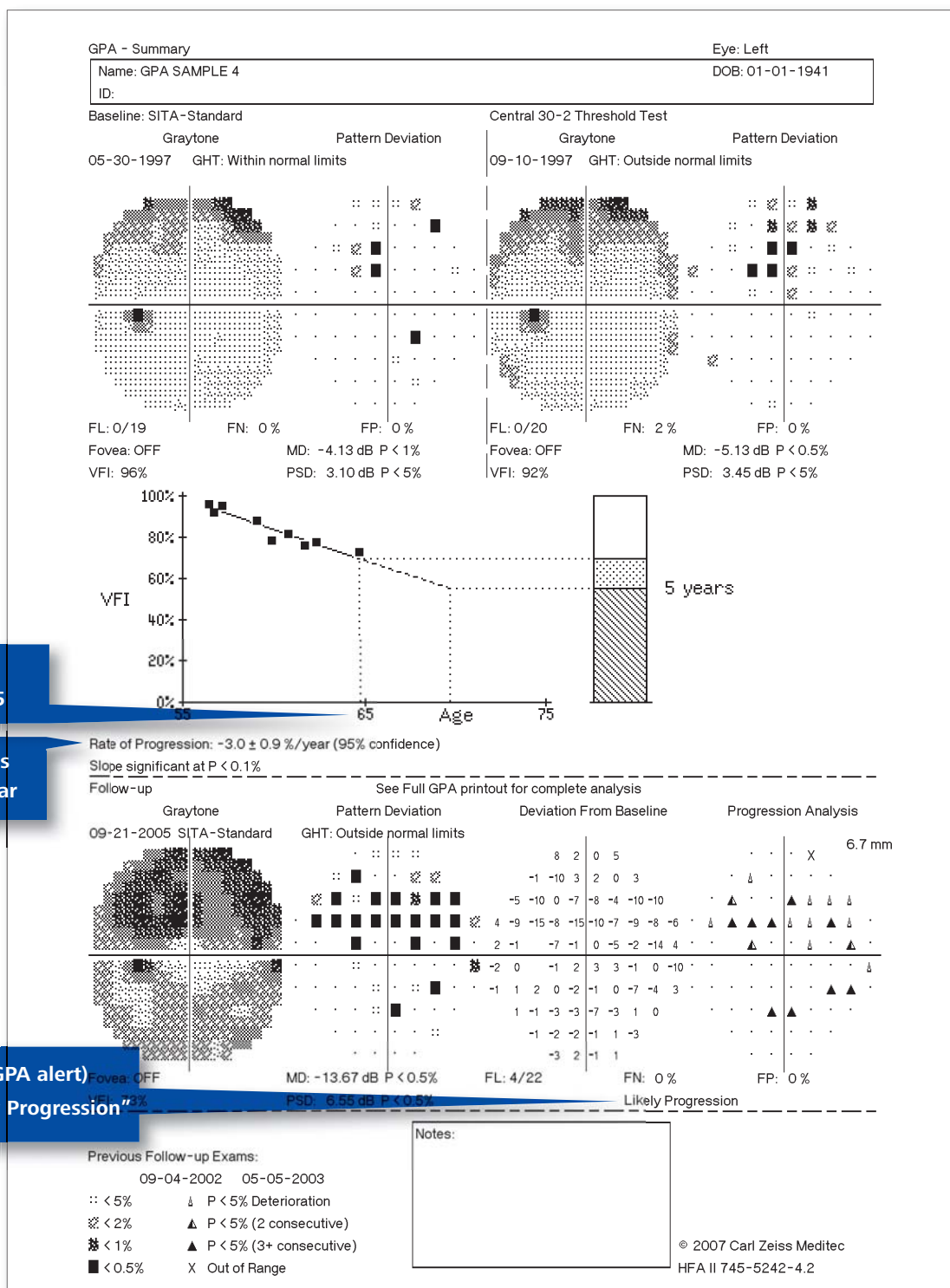
Part III.

Sample Case 4

Life expectancy considerations

Life expectancy can be an important consideration

A progression rate that might be acceptable at age 85 may not be acceptable at age 65.



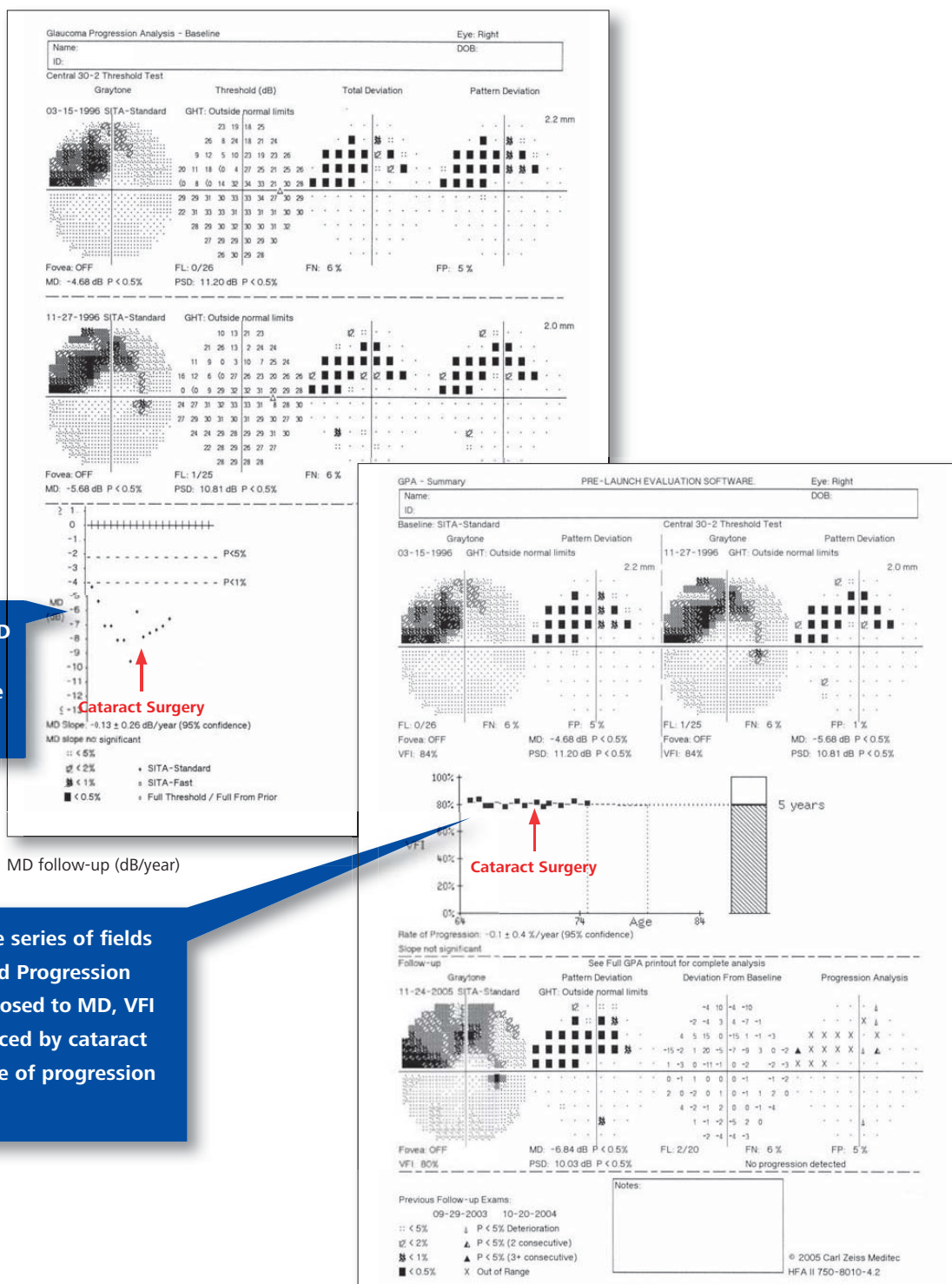
Part III.

Sample Case 5

Cataract Patient

VFI reduces the effect of cataract

This is an example of an eye with concomitant glaucoma and cataract where the MD values reflect much more loss than the VFI. The time of cataract surgery is marked by the red arrow in both graphs.



VFI follow-up from same patient

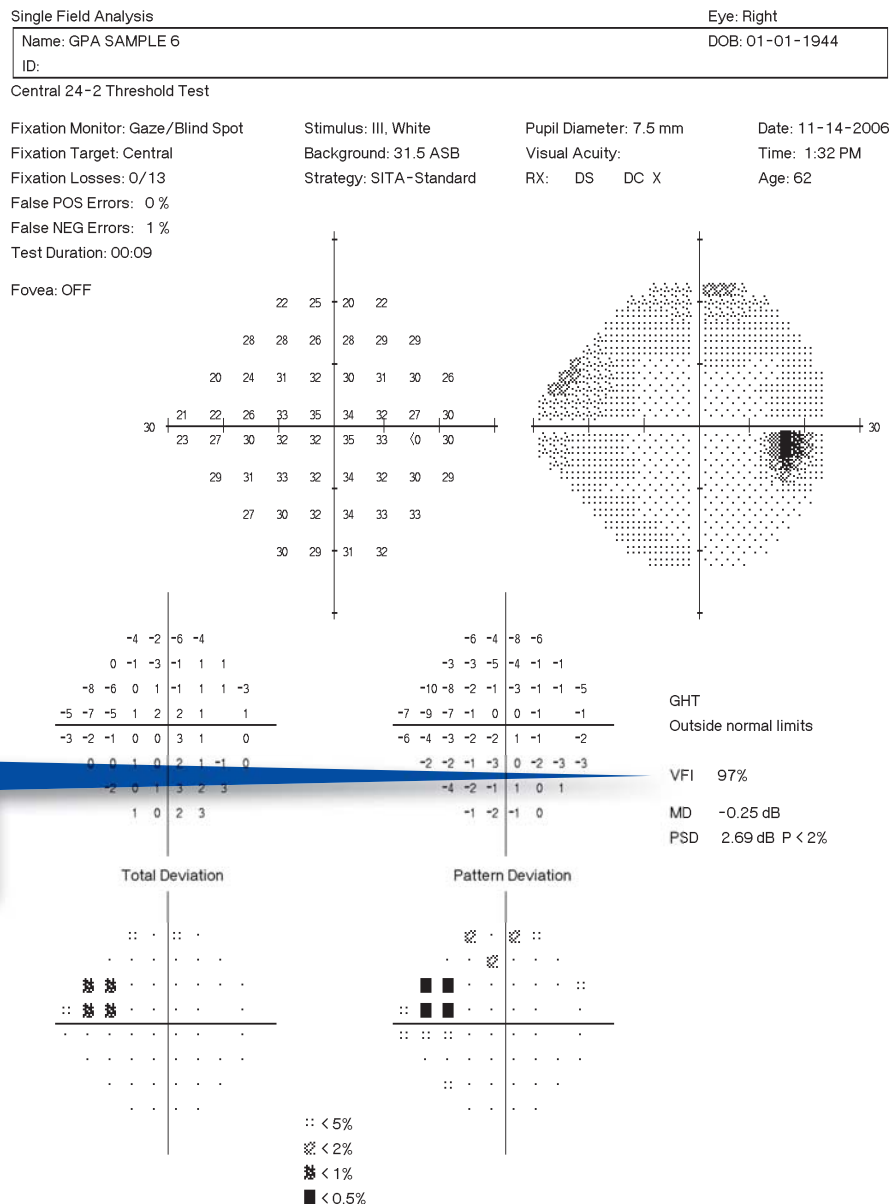
Part III.

Sample Case 6

Insufficient exams

A patient with only 1 exam

When there are insufficient exams to perform a GPA analysis, the new default report is the Single Field Analysis (SFA) report. Single page analysis remains the standard until follow-up is established.



VFI is calculated along with MD and PSD for each reliable exam

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