Glance Optical Pty. Ltd.

MRF Suite

Instruction Manual

MRF Online

mrf
melbourne
rapid
fields

Contents

1. A message from the creators of MRF

The Melbourne Rapid Fields (MRF) Online is a web application which is the future of practicing optometry. Vision testing can be performed on any device with broadband connection and an internet browser as long as the screen is larger than 10" (diagonal). It has all the advantages of the MRF iOS software with the additional benefit of telehealth and Esterman fields, if you have a large screen.

Our mission is to design products that help to preserve vision by being:

1. Clinically validated, portable and cheap.

2. Suitable for patients to monitor their own vision at home.

3. Suitable for doctors, optometrists, and general practitioners to perform ALL aspects

    of vision evaluation.

In creating these products, we have used the most contemporary test methods that incorporate modern knowledge of vision processing to give you a reliable test of vision that we hope is easy to use for you and your patients. We thank you for joining us on this unique and novel journey and we look forward to any feedback that you might have on our products.

| A/Prof George Kong | Prof Algis Vingrys |
| (Glaucoma specialist and IT expert) | (Professor in clinical optometry) |
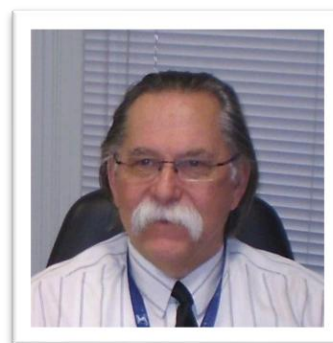
MRF is marketed as a partnership between the University of Melbourne and the Royal Victorian Eye and Ear Hospital. © 2017 The University of Melbourne, The Royal Victorian Eye & Ear Hospital.

2. The Glance Optical website

The Glance Optical website is the home of MRF Online and can be accessed by navigating to the following web address; www.visiondata.net.au or www.visioninhome.au (Australia), www.visioninhome.uk (UK and EU), www.visioninhome.com (International). All vision

testing is conducted via the MRF/Glance Optical website which requires the user to log into their account (Section 3.1. Creating a new user account) using a compatible device (Section 2.1. Compatible hardware and software).

Basic UDI-DI: ++G583MRFONLINEEU2VJ
UDI-PI: +G583MRFONLINEEU2VJ/01SW2.48

2.1   Compatible hardware and software

The following hardware is required for the use of MRF:

- PC running windows 10 or Mac running OSx 10 or newer

- Laptop screen or external monitor*

- Internet connection

- Web browser

    - Google Chrome

    - Microsoft Edge

    - Mozilla Firefox

    - Safari

- Keyboard

- Mouse

- Speakers

- Optional: Integrated Web cam

*Note that the binocular Esterman (Equiv.) visual field test requires a screen with minimum diameter of 27". Visual field testing require screen brightness of 300 nit or more. Visual acuity testing requires a minimum screen resolution of 4K or UHD (3840 x 2160 pixels).
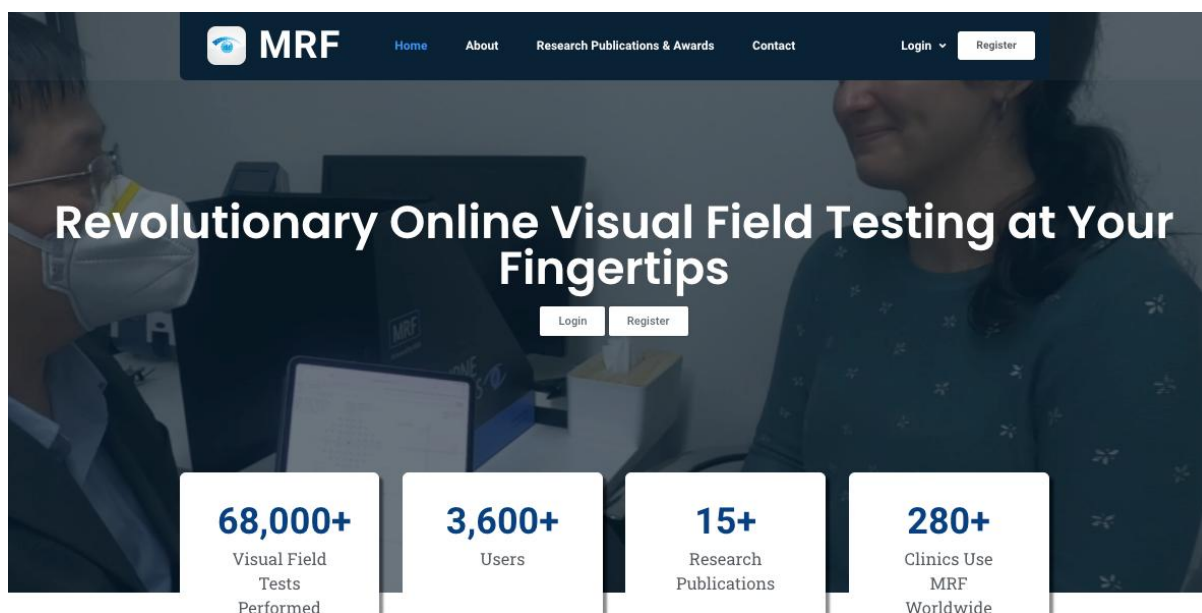
3. Creating a new user account and logging in

3.1 Creating a new user account

To set up a new user account, do the following:

1. Navigate to www.visioninhome.au (Australia), www.visioninhome.uk (EU/UK),

   www.visioninhome.com (International) on web browser.

2. Click on Register button

3. Complete all fields in Figure 1. Note that fields marked with * are required.

Register for the MRF Vision Test System

One (1) free test is applied upon registration

Email*
[Please enter email]

Re-enter email (for confirmation)*
[Please enter your confirm email id]

Your doctor's clinic code (optional for patients)
[Please enter clinic code]

I am a*
[Clinic]

Password*
[Please enter your password]

Confirm-password*
[Please enter your confirm password]

First name*
[Please enter your first name]

Last name*
[Please enter your last name]

Country*
[Australia]

State
[Please select your state]

Organisation (optional)
[Please enter your Organisation name]

Apply Voucher serial code (if available, in the following format AAAA-BBBB-CCCC-DDDD) or Promotional Code
[Please enter your voucher code or promo code]

☐ I'm not a robot   reCAPTCHA
                     Privacy - Terms

☐ I agree to the terms of service and privacy policy

[CLEAR]   [SUBMIT]

Figure 1. Signup screen for an MRF Online account

4. Click terms of service and privacy policy to read the conditions of use

5. Agree to the terms of service and privacy policy by ticking the check box

6. Click [Submit] . You will receive an email notification when your account has been successfully created.

Click [Clear] to clear your responses and start again

3.2   Logging in to your account

To log into your MRF Online account, do the following:
1. Navigate to www.visioninhome.au (Australia), www.visioninhome.uk (EU/UK), www.visioninhome.com (International) on web browser.

2. Click on Login button at the home page.

3. Enter your email address and password

4. Click on Login Button

Alternatively, the user may click [Forgot password?](#) to set a new password.

3.3   Logging out of your account

At the completion of a testing session, the user should log out of their account. To log out, do the following:

1. Click on **Logout** at the top Right hand Menu of the screen (Figure 1 i.)

4. The home screen

The user is greeted by the home screen when the log into their MRF Online account.

4.1 Elements of the home screen

Figure 2 shows the elements of home screen:
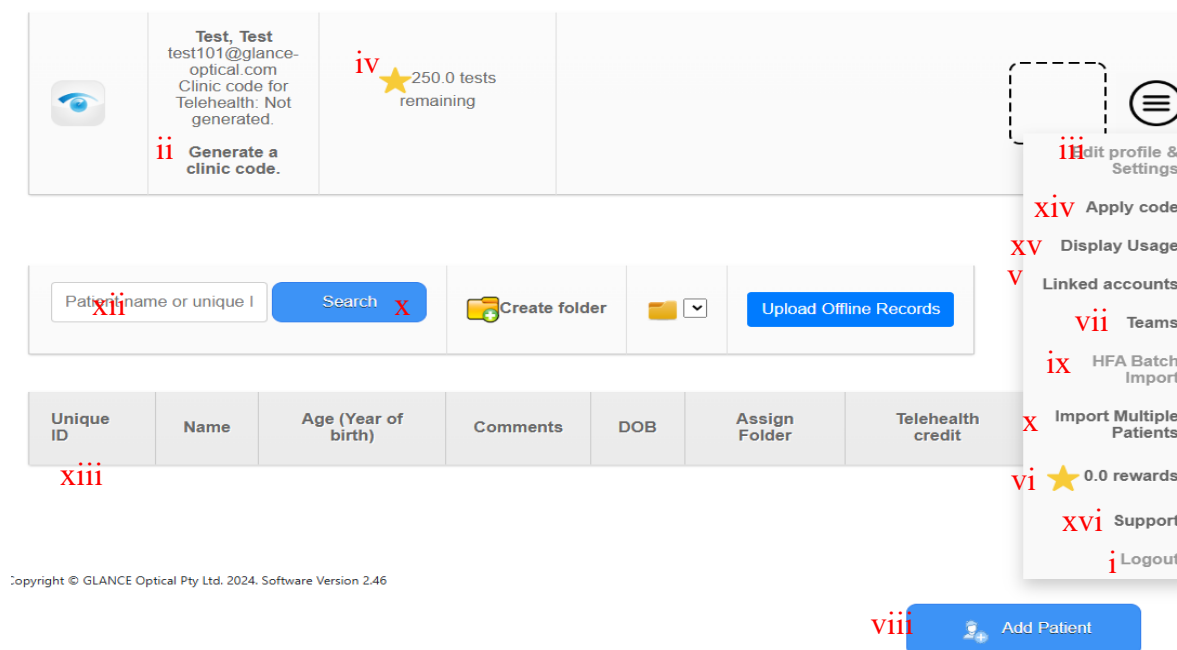
Figure 2. Elements of the home screen.

Each element is discussed in further detail below:

i. **Logout:** Log out of MRF Online

ii. **Generate doctor code:** Allows the user to generate a doctor code which can be used by patients to link their accounts (see section 4.2)

iii. **Edit profile:** Change your name, organisation name or password (see section 4.3)

iv. **Remaining tests:** The number of tests available to the user is displayed here. Note that 1.0 MRF tests allows for a single test of the right and left eyes

v. **Linked patients:** Displays patients linked to the user's account via the doctor code (see section 4.4)

vi. **MRF stars collected:** Displays the number of stars collected by the user by reviewing the results of linked patients

vii. **Team members:** Allows the user to nominate team members by entering their email address. Team members will be able to receive progression notifications from patients and be able to view patient data (see section 4.5).

viii. **Add patient:** Add a new patient to the Patient List (see section 4.6)

ix. **Import HFA Batch:** Allow import of a large batch of Humphrey Field Analyzer visual fields stored in zip files with each patient in dividual directories within the zip file.

x. **Import multiple patients:** Feature to be added in future release.

xi. **Create folder:** Allows the user to create a folder to organise patient data (see section 4.7)

xii. **Search:** Allows the user to search for a patient by entering the name or ID

xiii. **Patient list:** Displays all patients added to MRF Online

xiv. **Apply Code:** Access page to Apply voucher codes

xv. **Display Usage:** Display most recent usage of test credits on the current user account.

xvi. **Support:** Display contact information of support available for different geographical locations.

4.2   Generate doctor code

The user can generate a doctor code which can be shared with patients who intend to home-monitor their vision with MRF. Once the patient becomes a Linked Patient, their home test results can be reviewed (see section 4.4 Linked patients).
To generate a doctor code, do the following:

1. Click on **Generate a doctor code**

2. Your doctor code will be generated (see example in Figure 3)

Doctor Code: OPTI36

Your patient can enter this code in the "Doctor's email" field in the registration form instead of your email address to nominate you as their doctor.

Return to previous page.

Figure 3. A new doctor code has been generated.
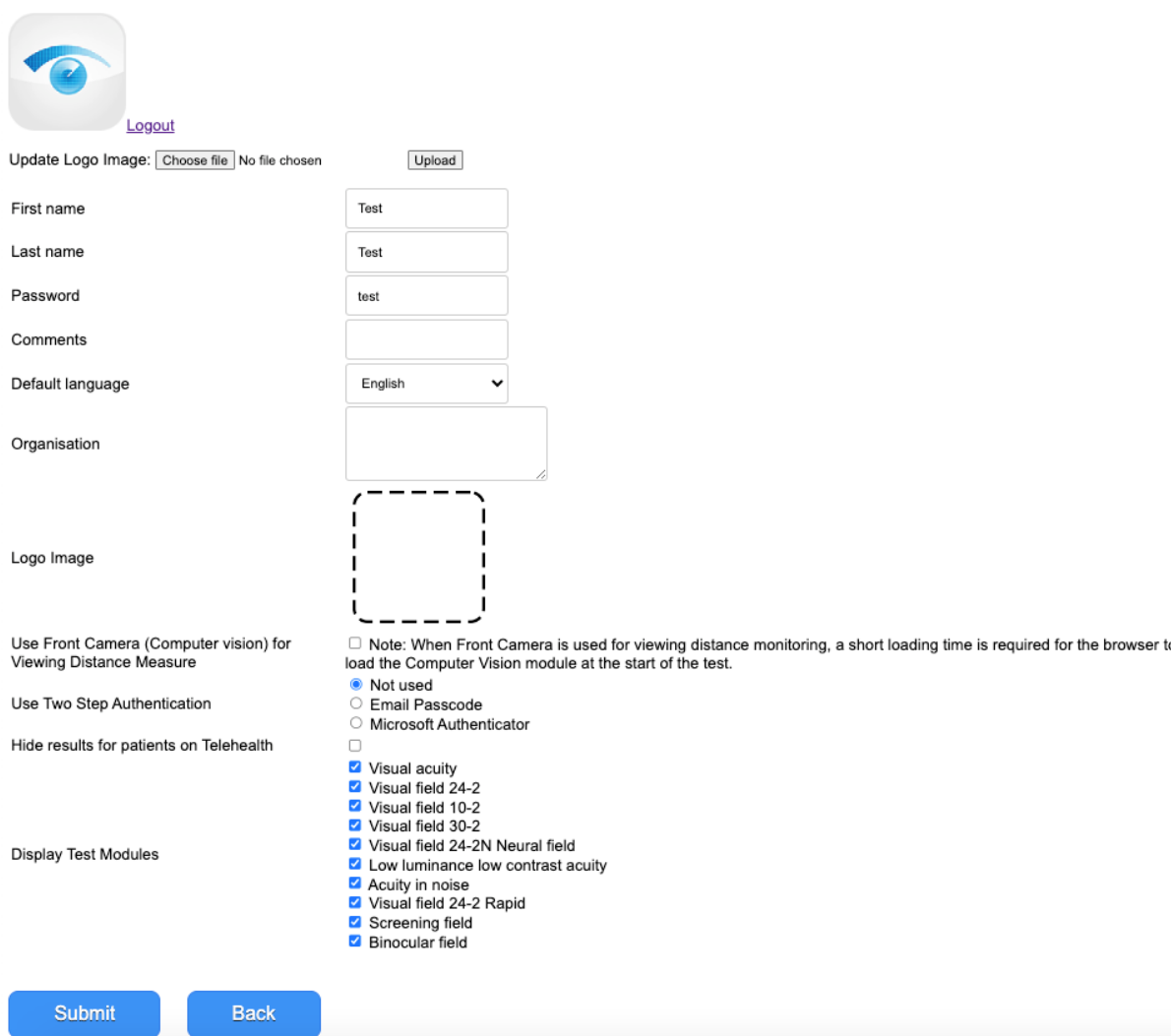
3. Click Return to previous page

4. The user's doctor code is now displayed in the upper left corner of the home screen

4.3   Edit profile

The user may change their name, organisation name or password in the **Edit profile & Settings** section. You can also upload a logo image for your clinic, set Default language for Voice guidance during MRF testing, setup Two Step authentication, and to setup whether to use front facing camera to monitor viewing distance, option to hide test results for patients on telehealth, and to select test modules to display in the Modular MRF vision test screen. To edit your profile & settings, do the following:

1. Click on **Edit profile & Settings**

   The following screen will appear (Figure 4).

Logout

Update Logo Image: [Choose file] No file chosen   [Upload]

First name	Test
Last name	Test
Password	test
Comments	
Default language	English

Organisation

Logo Image

Use Front Camera (Computer vision) for Viewing Distance Measure ☐ Note: When Front Camera is used for viewing distance monitoring, a short loading time is required for the browser to load the Computer Vision module at the start of the test.

Use Two Step Authentication
◉ Not used
○ Email Passcode
○ Microsoft Authenticator

Hide results for patients on Telehealth ☐

Display Test Modules
☑ Visual acuity
☑ Visual field 24-2
☑ Visual field 10-2
☑ Visual field 30-2
☑ Visual field 24-2N Neural field
☑ Low luminance low contrast acuity
☑ Acuity in noise
☑ Visual field 24-2 Rapid
☑ Screening field
☑ Binocular field

[Submit]   [Back]

Figure 4. The Edit profile screen.

2. Make necessary changes to the desired fields

3. Click [Submit] to save changes

   Click [Back] to discard changes

4.4   Two step authentication

To improve security of login you can select to use two step authentication. This can be selected within the **Edit Profile & Settings** section.   You can select Email passcode or use Microsoft Authentication.

If Email passcode is selected, then at Login, once correct user email and password has been entered, then an email will be sent to the user email address with a passcode. Enter the passcode in the form provided to login.

If Microsoft Authenticator is selected then at Login once correct user email and password has been entered, then Microsoft Authenication module is started. On first use, user can scan the QR code to generate an account on Microsoft Authenicator app on your smart phone device. Once setup, you can then enter the passcode that is shown on the Microsoft Authenicator app to login.

4.5   Linked patients

Patients who test their vision at home with MRF can nominate the user as their doctor. When the patient nominates the user as their doctor, they become a **Linked Patient**. The user will receive progression notifications for linked patients and will be able to review their data. Click on **Linked accounts** in the Top Right hand side menu.

4.6   Team members

The user can add team members to their account. A team member will receive progression notifications for linked patients and be able to review their data.
To add a new team member, do the following:

1. Click on the **Team members** menu item on the Top Right hand menu

2. Under **Add member** , enter the team member's email address

3. The team member will appear in the list (see Figure 5)

Figure 5. Adding a team member

4. A team member can be removed by clicking **Remove**

5. Click the back button of your browser to return to the home screen

4.7 Add patient

To test a patient, the user must create a patient account for MRF online. It is recommended that the user checks for an existing account prior to creating a new account (see section 4.1 xi. for information on searching for a patient).

To create a new patient account, do the following:

1. Click on ![icon] **Add patient** button

   The following screen will appear (Figure 6):

Figure 6. Creating a new patient account

2. Complete the fields (Note: The **Comments** , DOB, Address, Email field is

   optional)

3. The user may opt to allocate tests for telehealth. Click on the dropdown box and choose the desired number of tests to allocate. See section 10. Telehealth for more information.

4. Click [Add patient] to add the patient to your patient list

   Click [Clear] to clear the form and start again

4.8   Creating a new folder and assigning a patient

This feature allows the user to organise their patients into labelled folders.
To create a new folder, do the following:

1. Click on the [folder icon] **Create folder** button

   The following screen will appear (Figure 7):

Logout

Create Folder

New folder name	Glaucoma

Submit   Clear

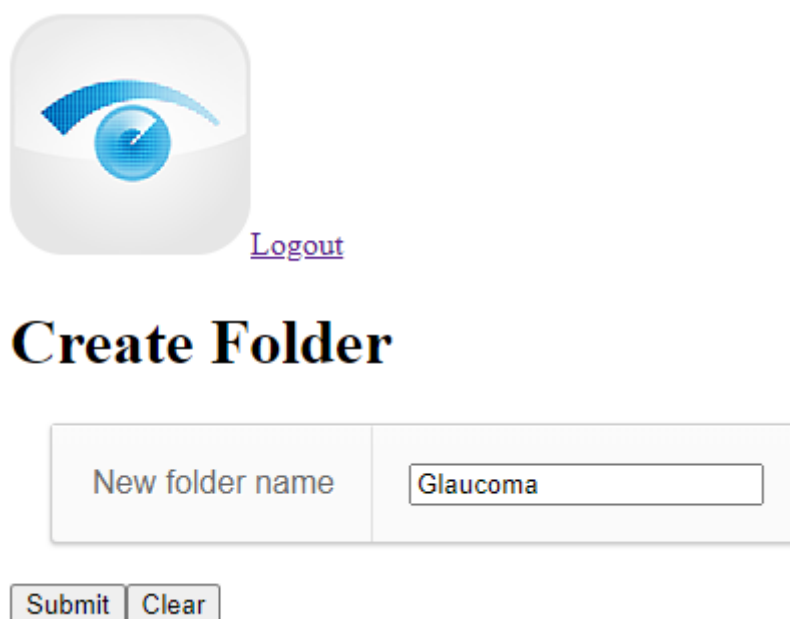Figure 7. Creating a new folder

2. Type a name for the new folder in the specified field

3. Click [Submit] to save the new folder

   Click [Clear] to clear the form and start again

The new folder will now appear in the home screen (Figure 8):

Patient List

Figure 8. Assigning a patient to a folder

4. To assign a patient to the new folder, click on the drop down box under **Assign Folder** for the patient you wish to assign

5. Click on the folder you wish to assign the patient to. The patient will be moved to the new folder and will no longer be visible in the main folder of the home screen.

   Note: When viewing the patient list within a new folder, the user can return to the main folder by clicking the **Back to main folder** button

5. The patient account screen

The patient account screen displays patient data including test history and progression rate. In addition, the user can start a new test or enable telehealth tests from this screen.

5.1 Elements of the patient account screen

Figure 9 shows the elements of home screen:

Figure 9. Elements of the patient account screen

Each element is discussed in further detail below:

i. **Back to patient list:** Return to the patient list on the home screen

ii. **Start test:** Start an MRF test (see section 8. The MRF Vision System)

iii. **Edit tests (telehealth):** Edit the tests for the patient to undertake via telehealth (see section 5.2)

iv. **Copy to clipboard (telehealth):** Copy the telehealth URL to the clipboard (see section 5.3)

v. **Send Invite to Email:** An email invitation with telehealth URL will be sent to the patient's email address on file.

vi. **Telehealth Reminder:** Set the interval for sending out a Telehealth Test reminder

vii. **Telehealth Test Completion Notification to Clinician:** Choose the criteria to notify the clinician, which can be notify every time, no notification or only notify if progression detected.

viii. **Edit details:** Edit the patient's details (see section 5.4)

ix. **Patient test account:** Displays the remaining MRF tests available to the patient

x. **Clinic test account:** Displays the remaining MRF tests available to the user

xi. **Topup:** Allows the user to top up the patient's account with 1 MRF tests from the clinic account

xii. **Withdraw:** Allows the user to transfer 1 MRF test from the user's account back to the clinic's account

xiii. **Left eye progression trend:** Displays a graphical representation of the patient's mean defect (MD, dB) trend for the left eye. Calculation requires a minimum of 5 tests (see section 5.5).

xiv. **Right eye progression trend:** Displays a graphical representation of the patient's mean defect (MD, dB) trend for the right eye. Calculation requires a minimum of 5 tests (see section 5.5).

xv. **Test history:** Lists the patient's test history

xvi. **Test results:** Displays the test data for individual tests (see section 5.6)

xvii.   **Show Field Comparison Overview:**   Show an overview side to side comparison of visual field test across time.

xviii.   **Import Third-party (eg. Humphrey) field:** Allow Third party visual field tests to be imported.

xix.   **Logout:** Log out of MRF Online

5.2   Edit tests (telehealth)

This feature allows the user to edit the tests to be performed by the patient via a telehealth consultation.
To edit the tests to be performed via telehealth, do the following:

1. Click on **Edit Tests**

    The following screen will appear (Figure 10):

Edit Patient Account

Unique ID	000000034567
Patient name	John Smith
Year of birth	1940
Additional info	
DOB	dd / mm / yyyy
Address	
E-mail	
Comments	
Telehealth tests for this patient	☑ Visual acuity ☑ Visual field 24-2 ☐ Visual field 10-2 ☐ Low luminance low contrast acuity ☐ Screening field ☐ Specify Right Eye ☐ Specify Left Eye

Submit   **Clear**

Figure 10. The Edit Tests screen

2. The patient name, year of birth and comments fields are prefilled. Ensure these details are correct

3. Check the boxes against the tests you wish the patient to perform for telehealth

4. Click Submit to save the current selection

   Click Clear to clear the form and start again

5. Click the back button of your browser to return to the patient account screen

5.3   Copy to clipboard (telehealth)

This feature allows the user to copy a simplified telehealth URL to the clipboard. This URL can be sent to the patient electronically (eg: via email) and, when accessed, allows them to login to their telehealth account using their year of birth.

To copy the simplified telehealth URL to the clipboard, click the `Copy to clipboard` button.

5.4   Edit details

The user can edit the patient's details by clicking on **Edit Details** (Figure 11). The patient's name and year of birth can be altered, however, the unique ID cannot be changed.

Figure 11. The Edit Details screen

5.5   Progression trend

MRF Online displays the patient's mean defect (MD) progression trend for the left and right eyes. A minimum of 5 exams is required for the progression trend to be calculated and displayed. An example of a progression trend for a patient's left eye is shown in Figure 12.

A.

Left eye - Progression Trend

Feb 3, 2020
MD -1.16

Rate of change = -0.12dB/yr.
Expected MD in 3 years = 0.11dB

B.

Right eye - Progression Trend
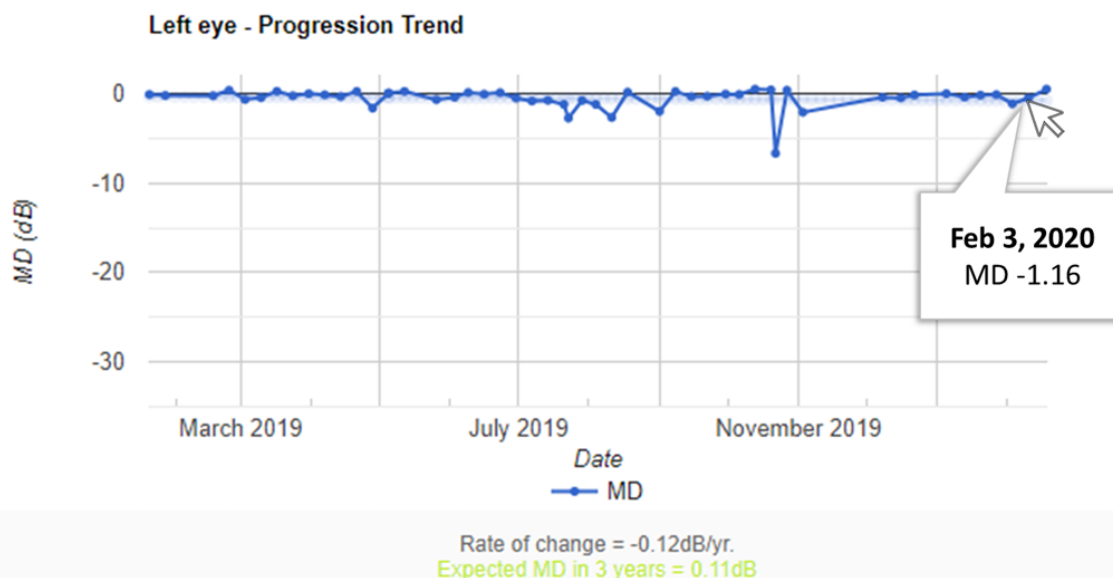
Rate of change = -1.67dB/yr.
Expected MD in 3 years = -21.94dB
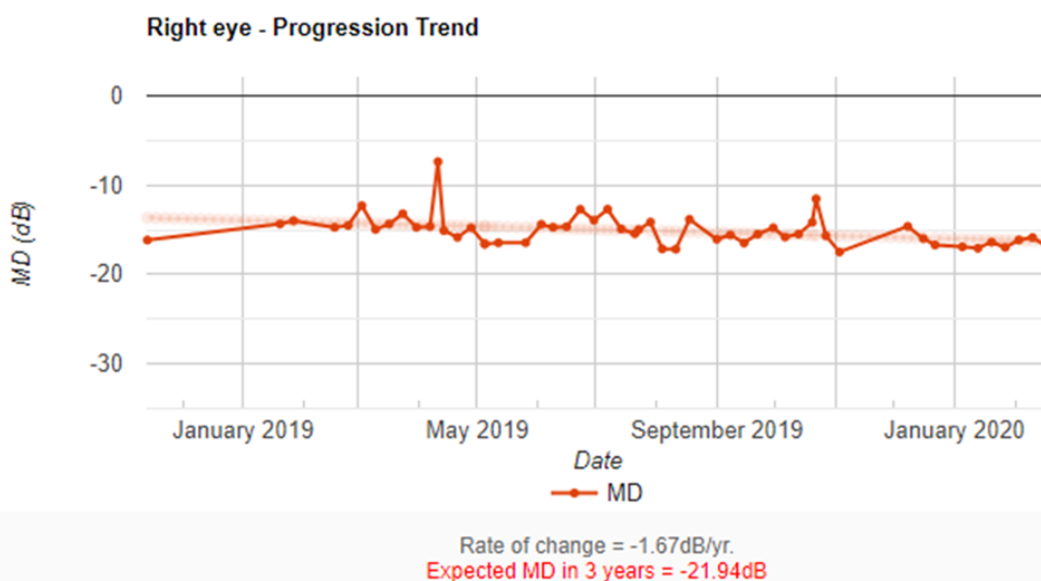
Figure 12. Example progression trends. A. Left eye progression trend for a normal eye. Note that hovering over a data point displays the date and MD for that test. B. Right eye progression trend for a glaucoma eye.

The x-axis for the progression trend graph (Figure 12) displays the time (month, year) and the y-axis represents the MD (dB). Note that a regression line is fitted through the data points. The rate of change is given as a value in dB/yr and the expected MD in 3 years is shown in dB.

Different Trend analysis can be displayed by selecting the corresponding link underneath the first trend analysis graph:

1. PD Progression – Show graph of Pattern Deviation trend

2. VC/VFI equ progression – show graph of Visual capacity (%) trend

3. Regional analysis Central MD progression - show progression of MD calculated

    from the central region

4. Regional analysis MD progression inf MD - show progression of MD calculated

    from the inferior region

5. Regional analysis MD progression sup MD - show progression of MD calculated

    from the sup region

5.6   Progression Trend - Visual Field Comparison Overview Screen

Users can compare the visual field test outputs for each eye side by side in a chronological fashion by selecting the **Visual Field Comparison Overview** link. This will then display the Right eye and Left eye visual fields separately, and the 24-2/30-2 fields will be displayed in different section to macular 10-2 fields for each of comparison. Multiple test results can be viewed chronologically and it can be scrolled across on a scroll bar.

Right eye field
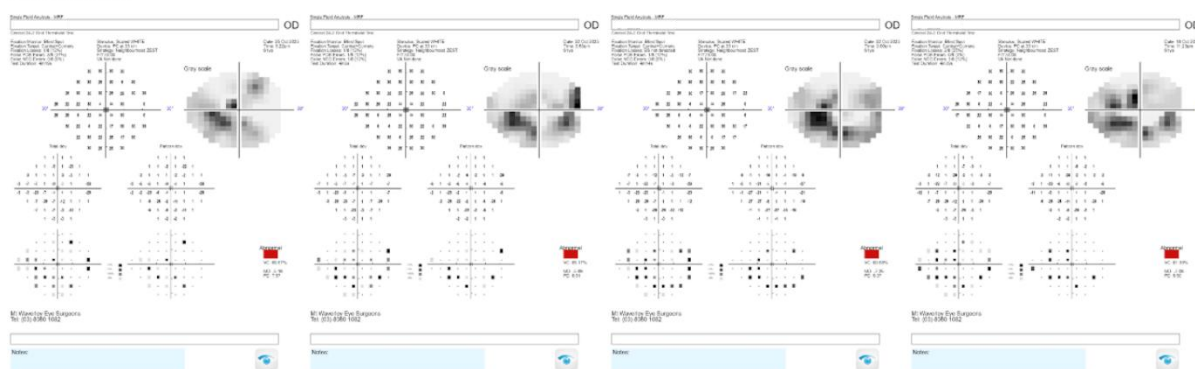
Figure 12.1: Example Visual Field Comparison Overview display for a Right eye 24-2 visual field series.

If third-party visual fields are imported as an image (jpeg / png) or pdf, then the visual field will be displayed along side visual field tests performed on MRF on the same horizontal scroll area for visual comparison.

Figure 12.2: Example Visual Field Comparison Overview display for a Right eye 24-2 visual field series for HFA visual field and MRF visual field.
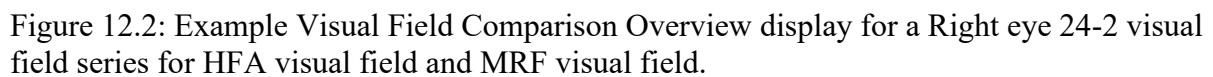
5.7   Test results

Individual test results can be accessed by clicking on a date in the Test History (Figure 9 xiv). This opens the Test Results screen (Figure 13). The Test Results screen displays the following:

- The date of the selected test

- The option to download a [printer friendly version](#) of the test results as a pdf

- Test results for each eye that was tested (see section 8. The MRF Vision System)

- Progression analysis for each eye (see section 9. Visual Field Progression)

- The option to download a Microsoft Excel file containing the raw data for each eye by

  clicking on **Left data** or **Right data**

Figure 13. The Test Results screen.

5.8   Importing Third-party test results

User can even import third-party fields (in pdf or png or jpeg) from HFA or Medmont or FDT

so the previous test results can be compared to MRF test results.   For HFA pdf, the visual

field values are imported automatically, but for other third-party field tests the values can be

entered manually. To import Third-party test results, select the **Import Third-party (eg Humphrey) field** link.

Logout

Back to patient list

Unique ID: M12345
Patient name: Test patient

Import HFA field

Extract from existing HFA field (pdf form)

Choose file | No file chosen   Upload
Side - for non pdf files: Left ⌄

Field date *	dd/mm/yyyy		
Left MD		Right MD	
Left PSD / PD		Right PSD / PD	
Left VFI / VC		Right VFI / VC	
Left FL		Right FL	
Left FP		Right FP	
Left FN		Right FN	
Left type	24-2 ⌄	Right type	24-2 ⌄
Left File		Right File	

Import Field   Clear

Figure 13.1: Import Third-party field screen

To import HFA visual field test: Click on Choose file button and select a HFA visual field PDF file for one eye first (eg, Right eye). Click on Upload Button, this will save the HFA field to the MRF cloud and the page will automatically detect the side of the eye, and extract some key information from the PDF file, such as the MD, PSD, VFI , FL, FP and FN values, Visual field test date. It will also identify if the field test is a 24-2, 30-2 or a 10-2 test. Repeat the process for the fellow eye (eg. Left eye). The form should now be fully populated. Click on Import Field button to import both the Right and Left eyes as a single test episode into the patient account.

To import other third-party field test: Click on Choose file button and select a visual field image or pdf file for one eye first (eg, Right eye). Select the correct side (eg Right eye) from the drop down button. Click on Upload Button, this will save the field to the MRF cloud. Manually enter some key information such as the MD, PSD, VFI , FL, FP and FN values, Visual field test date in the form below for that eye. Also identify if the field test is a 24-2, 30-2 or a 10-2 test.   Repeat the process for the fellow eye (eg. Left eye). The form should now be fully populated. Click on Import Field button to import both the Right and Left eyes as a single test episode into the patient account.

6. Setting up the patient

Prior to conducting a visual field exam using MRF, set up the patient according to the following instructions to ensure reliable results.

6.1   Room set up

Prior to performing an MRF exam, select an area where the patient can be seated comfortably. Ensure the computer screen is free from dirt and fingerprints by wiping it with a microfibre cloth. Dim the room lights and ensure the screen is oriented such that there are no reflections off the screen (e.g. from ceiling lights, doors, windows, etc).
Turn the brightness of the screen to a maximum. Allow webcam access on the web browser if a webcam is used for viewing distance/ gaze / environment monitoring.

6.2   Near correction

The user must wear their habitual near correction whilst performing the exam. This may be in the form of single vision near spectacles, multifocal spectacles (including bifocals), contact lenses or habitually unaided.

6.3   Test distance

The MRF test distance is determined by the type of test to be performed any the resolution of the computer screen that will be used for testing. On screen instructions will advise of the appropriate test distance (typically between 20 and 50cm). It is the responsibility of the user to ensure that the patient maintains the correct test distance throughout the duration of the test. If the webcam reference has been set, the patient will be instructed to move further or move closer to the desired viewing distance based on the webcam analysis of face size.

7. Test overview

The MRF uses a Bayes predictor and neighbourhood logic resulting in a very efficient method of thresholding. For ALL test grids (except RED threshold) spot size increases from the fovea (about Goldmann size II) to peripheral locations (about Goldmann size V) to return fixed thresholds and variability at all locations. This has the benefit of making early defects

easier to expose in the periphery. Spots have 'soft' edges with a luminance ramp (see Figure 8).

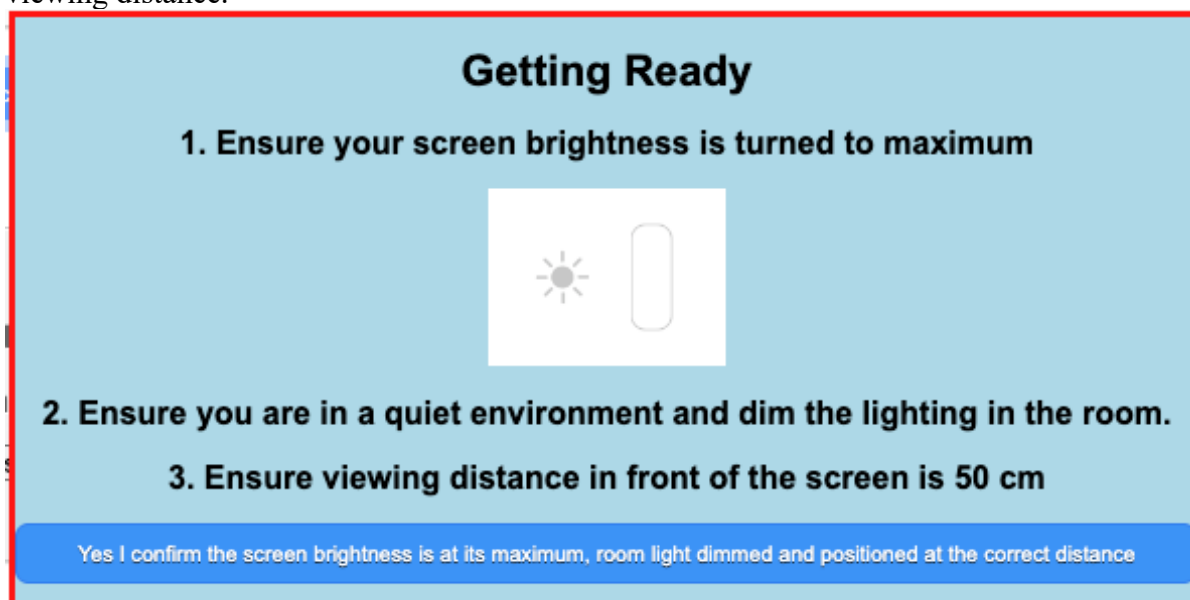Test grids optimise spot locations for ALL causes of vision loss but also have specific patterns further refined for monitoring diabetes, glaucoma, macular or neural losses. Screening is performed at 2-3dB below expected threshold on an optimised grid designed to detect ALL causes of vision loss and implements a neighbourhood logic for retesting missed locations.

8. The MRF Vision System

To perform a test with MRF Online, do the following:

1. Log into your account (see section 3.2 Logging into your account)

2. Add a patient (see section 4.6 Add Patient), or select an existing patient from the

   Patient List (see Figure 2 xii)

3. From the Patient Account Screen, select Start New Test button (Figure 9 x). The MRF

   Vision System will open in a new window (Figure 14)

A popup alert screen will be displayed to remind you to turn screen brightness to maximum, ensure room light is dimmed and (if calibration has been completed) maintain correct viewing distance.

Getting Ready

1. Ensure your screen brightness is turned to maximum

2. Ensure you are in a quiet environment and dim the lighting in the room.

3. Ensure viewing distance in front of the screen is 50 cm

Yes I confirm the screen brightness is at its maximum, room light dimmed and positioned at the correct distance

There are several Tests that can be performed on the modular MRF Vision System. The MRF Vision system is organised into sections. The first section is the Calibration section and the last section is the Save test section. Other tests are in their individual sections and these can be added or removed by selection in the Edit Profile & Settings section (see Section 4.3) Step 1, the screen calibration (section 8.1) is compulsory the first time the MRF Vision System is used. The user may choose which of the tests they wish to perform (Steps 2-7). Step 8, Save Test (section 8.8), is also compulsory.
The top section of the page also allow user to select the Voice Guidance language. A larger fixation target option can also be chosen.
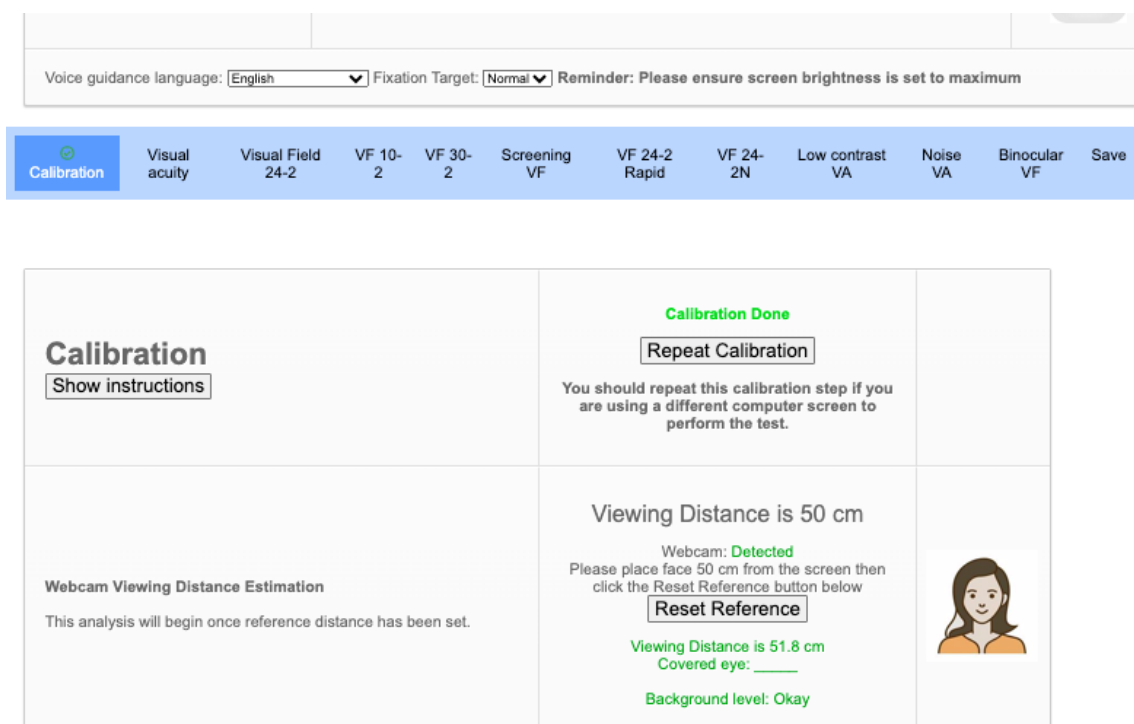
Figure 14. The MRF Vision System.

8.1 Section 1: Screen Calibration

Prior to conducting a test, a screen calibration must be performed. The calibration is stored and does not need to be repeated each time the user logs in, however, the calibration must be repeated each time a new computer screen/device is used. The calibration also needs to be repeated once a year on the same computer screen or device, or if the cache of the web-browser is cleared. To conduct a screen calibration, do the following:

1. Click Start Calibration

2. The Calibration Screen will open (Figure 15). Hold a standard size bank/credit card in the white box on the screen. You can also select Ruler button to change the physical object length to 5cm on a Ruler.

3. Click the ⊖ and ⊕ until the edges of the white box match the edges of the bank/credit card (or 5 cm on a ruler). You can also drag the following icon with the mouse left and right to move the edge of the white box to match the physical length.
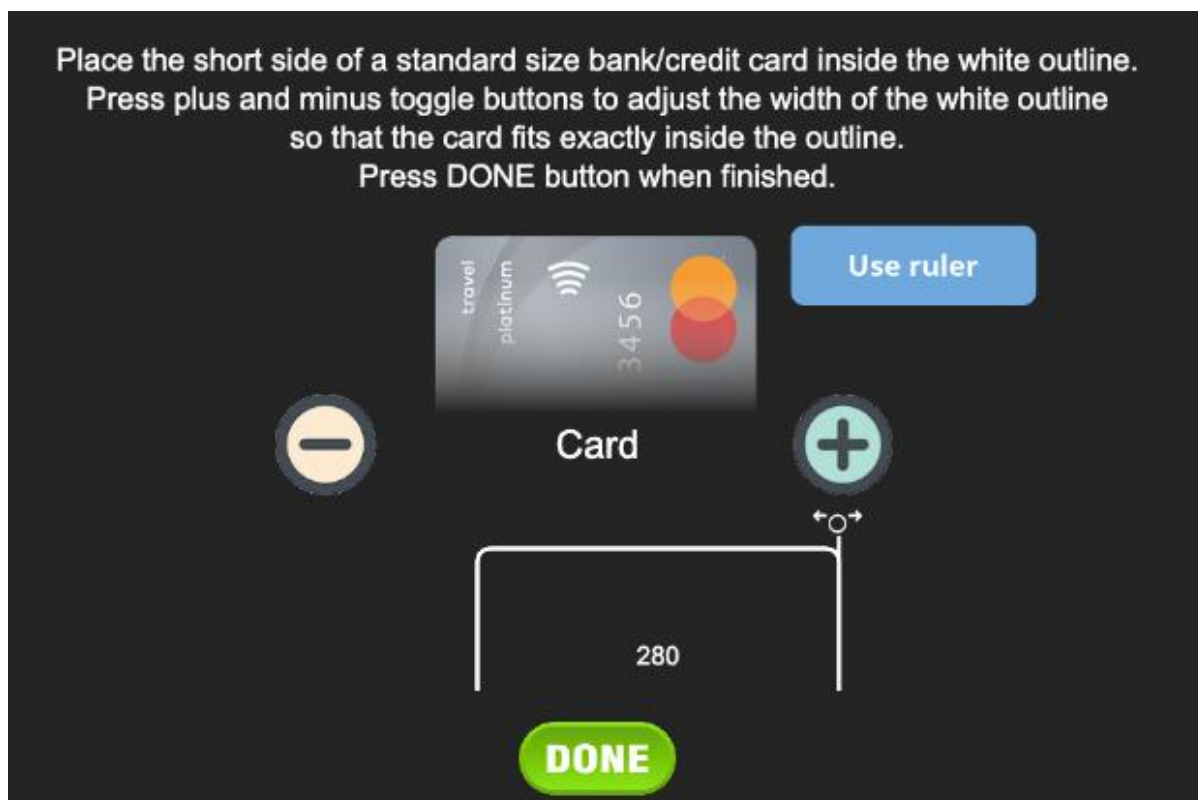
4. Click DONE

The screen calibration is complete.

Figure 15. The Calibration Screen.

8.2   Calibration of Viewing Distance on Front facing camera

The Front Facing camera of the computer device can be used for the monitoring several parameters for visual field testing, most importantly the Viewing distance.
To first use the Front facing camera, it must first be calibrated once to set the reference. To do so, move your face to the viewing distance specified, then click on **Set Reference (or Reset Reference)** button.   Ensure your face is positioned front on towards the front-facing camera.   Your browser may prompt you to allow access to the front-facing camera (or web-cam), please select Always allow if you would like to use this feature.
Once done, MRF system will commence monitoring the viewing distance in real time and the estimated value will be displayed on screen. If the estimated viewing distance is further than desired viewing distance by 10% then you will be prompted to move closer to the screen. Conversely, If the estimated viewing distance is closer than desired viewing distance by 10% then you will be prompted to move farther from the screen. This reference can be used for different patients or a new reference can be set for each new patient using the MRF system test.

The following Sections (2-7) outline the visual acuity and visual field options that are available to the user. The user may choose to administer one or a combination of these tests. It is not compulsory to complete all tests. The tests can be completed in any order. You can move to the next section by clicking the **Next Section** button.

8.3 Section 2: Visual acuity test (High contrast acuity)

Near Visual acuity test

1. Ensure the patient has been set up according to the instructions provided in section 6

   (Setting up the patient) and occlude the non-testing eye

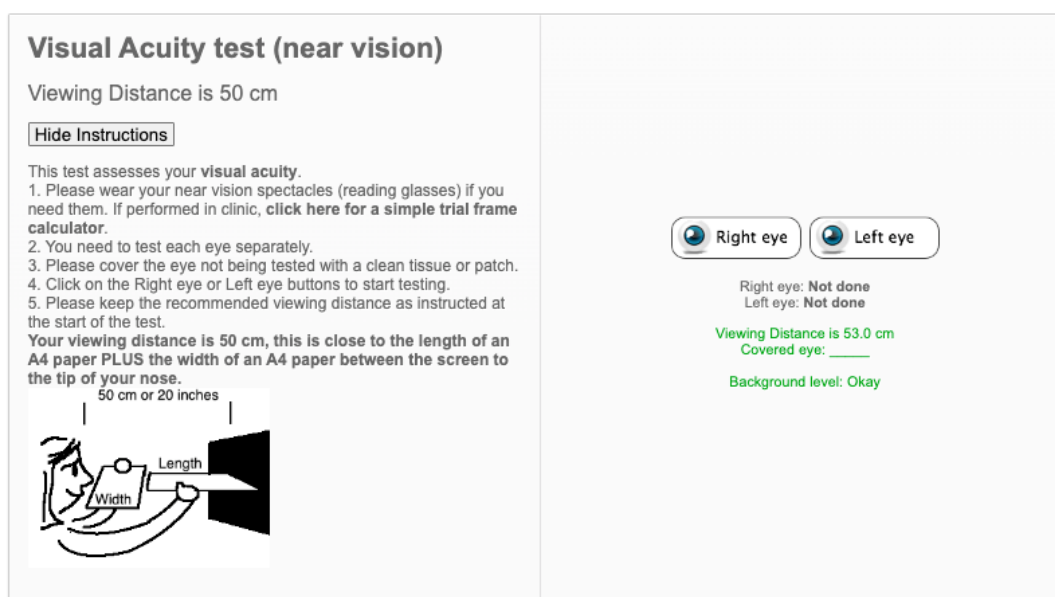2. Click on ⊙ Right eye or ⊙ Left eye to start the test (Figure 16)

Figure 16. Step 2: Visual acuity test (high contrast acuity).

1. A tumbling E in a random orientation is presented to the patient in the middle of the

   screen (Figure 17)

2. Instruct the patient to click on the tumbling E at the bottom of the screen that

   corresponds to the orientation of the target. The target will get progressively smaller.

3. If the patient is unsure, they may click on the blue question mark

4. At the completion of the test, the user will be returned to the MRF Vision System
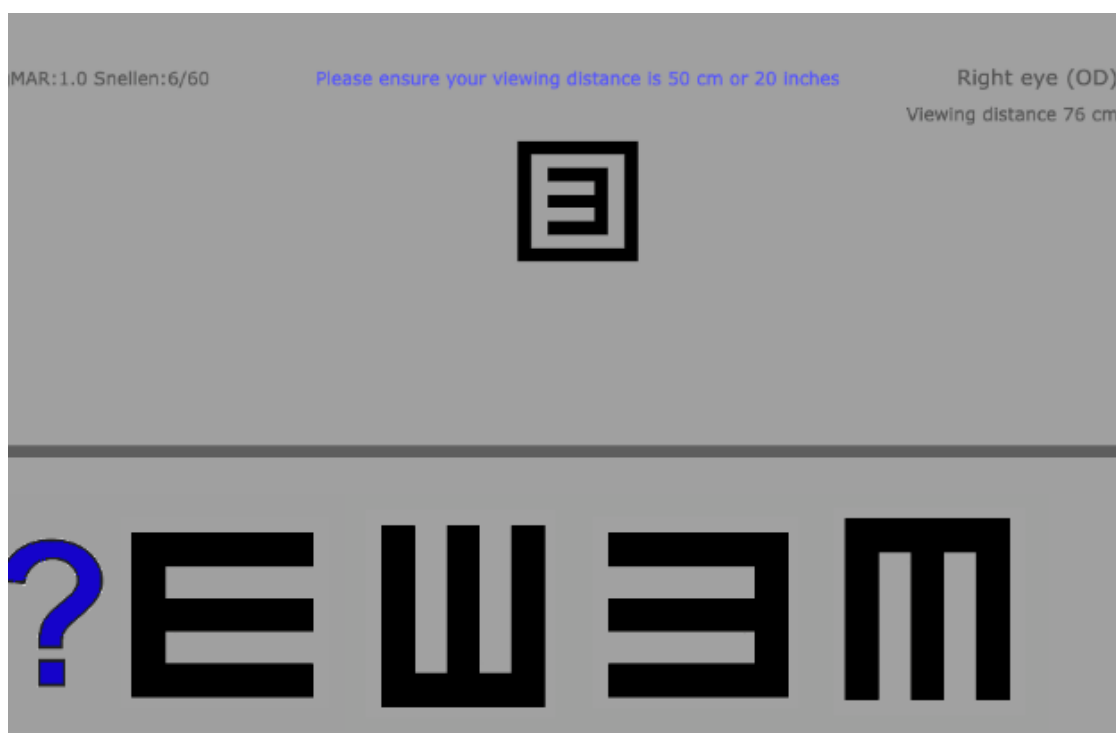
   dashboard

Figure 17. The high contrast visual acuity task.

Distance Visual Acuity with Hand-Motion Detection

Test Setup
- Seat the patient approximately 2 metres from the display screen in a well-lit environment.
- Ensure the patient's hand is clearly visible within the webcam frame.
- Ensure no multiple people or multiple hands are in the webcam view.
- The non-testing eye should be occluded in the same way as other acuity tests.

Test Procedure
- A visual target is presented on the screen.
- The system prompts the patient to indicate the orientation of the target by moving their hand **up, down, left, or right**.
- The webcam, using AI-based motion detection, automatically detects the direction of movement and records the response.
- Target size adapts according to the correctness of responses to determine the patient's visual acuity threshold.

Test Completion
- The test ends once the software has determined the smallest optotype size the patient can reliably identify.
- The results are stored in the patient's record, alongside other acuity test results.

Output
- Reported in standard logMAR units or Snellen equivalent, consistent with existing visual acuity reporting.
- Results are available in the **Test Results screen** and can be exported with other test data.

Notes
- Patients should be instructed to keep their movements clear and deliberate to ensure accurate detection.
- Any interruptions in webcam visibility (e.g., poor lighting, hand moving out of frame) may cause the system to prompt the patient to repeat the gesture.

8.4   Visual field test (24-2)

8.4.1   Performing a visual field test (24-2)

1. Ensure the patient has been set up according to the instructions provided in section 6

   (Setting   up   the   patient)   and   occlude   the   non-testing   eye.

To test Right eye, please cover Left eye.
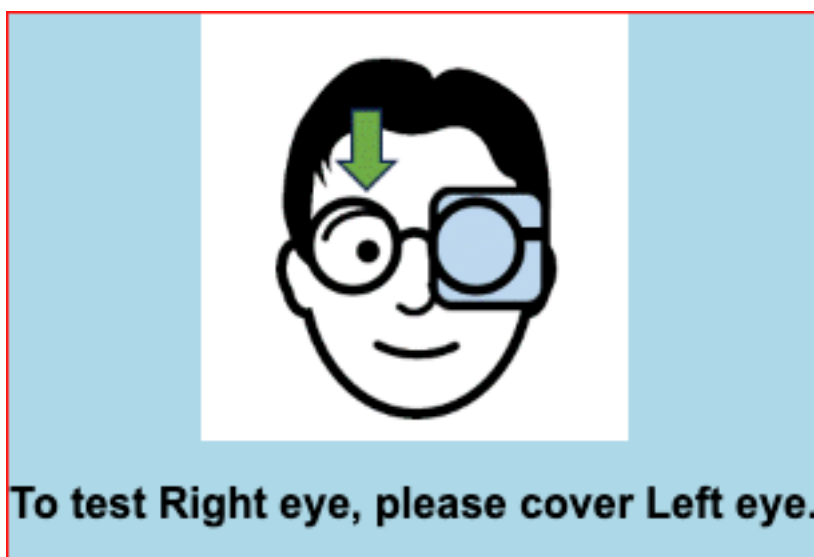
Animation guide will prompt the correct occlusion of the eye for a particular eye. The Front-facing camera, if enabled, will attempt to analyse the patient's facial feature to determine if an eye is occluded with an occlude. If the wrong eye is occluded for a test then an alert will be displayed to ask user if the correct eye has been occluded.

2. Click on or to start the test (Figure 18)

Figure 18. Step 3: The visual field test (24-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 19). The red cross may change positions during testing.

4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:

   a. click on the brown 'response box' (see Figure 19) with the mouse pointer, or;

   b. tap the space bar

   Note: An audible click will sound each time the patient registers a response

5. Click on the box or press space bar to start the test

6. If front-facing camera is enabled, then Viewing distance will be monitored in real time. If viewing distance if 10% further than desired viewing distance then an animation will be displayed with animated circle moving towards the central red dot, and a prompt will be sounded to ask patient to move closer towards the screen. Conversely, if viewing distance if 10% closer than desired viewing distance then an animation will be displayed with animated circle moving away from the central red dot, and a prompt will be sounded to ask patient to move farther away from the screen.

7. At the completion of the test, the user will be returned to the MRF Vision System dashboard

8. The test may be paused by clicking on the red cross in the centre, user can also select exit test within the Pause screen.

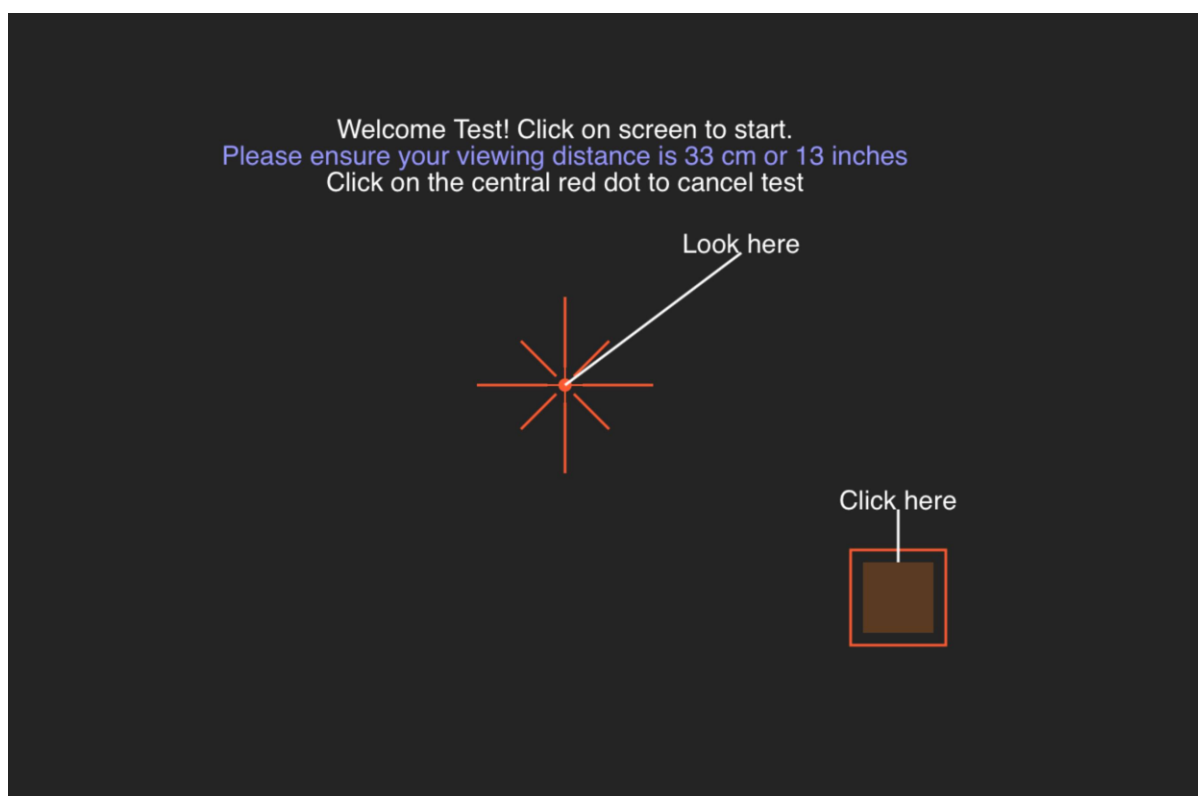Figure 19. The visual field task (24-2).

8.4.2 Visual field test (24-2) results

An example of the visual field (24-2) output is given in Figure 20.
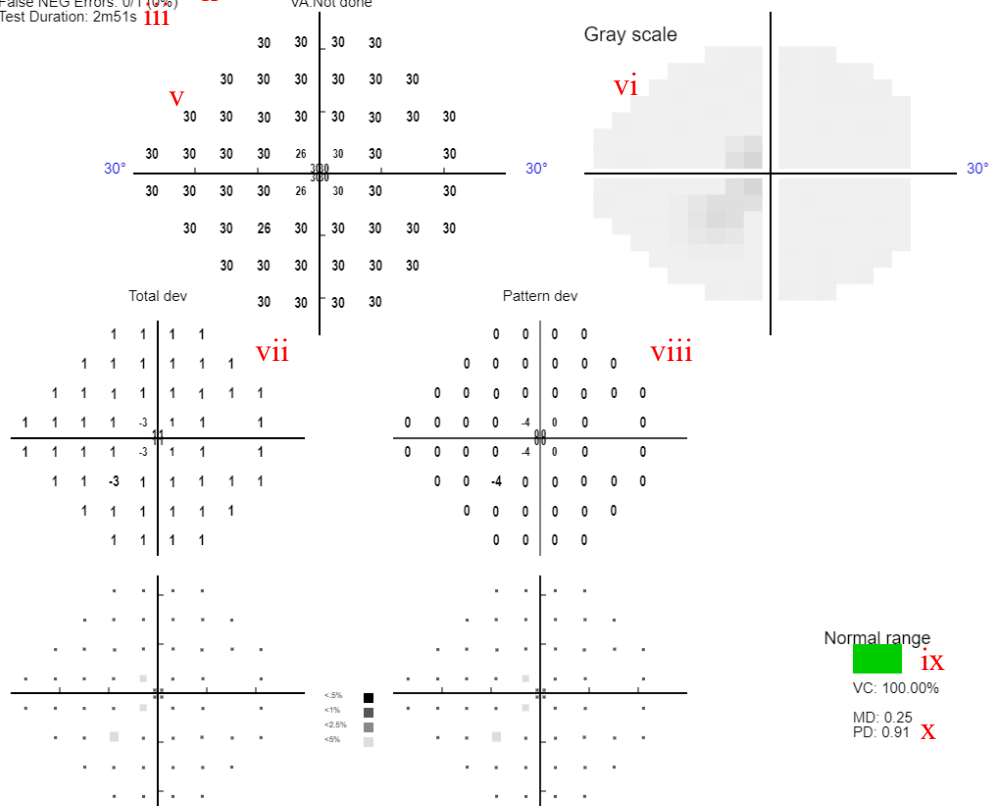
Figure 20. The 24-2 visual field printout.

Elements of the visual field printout are given below:

    i.   Patient details

    ii.   Reliability indices

    iii.   Test duration

    iv.   Eye tested

    v.   Numeric plot

    vi.   Gray scale

vii.   Total deviation

viii.   Pattern deviation

ix.   Normative indicator

	Normal
	Borderline
	Abnormal

x.   Global indices

xi.   Gaze monitoring plot

8.4.3   Progression analysis

See section 9 (Progression analysis) for more information.

8.5   Macular field test (10-2)

8.5.1   Performing a macular field test (10-2)

1. Ensure the patient has been set up according to the instructions provided in section 6

    (Setting up the patient) and occlude the non-testing eye

2. Click on Right eye or Left eye to start the test (Figure 21)

Figure 21. Step 4: The macular field test (10-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 22). The red cross may change positions during testing.

4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:

    a. click on the brown 'response box' (see Figure 22) with the mouse pointer, or;

    b. tap the space bar

Note: An audible click will sound each time the patient registers a response

Please note, grey spot can also be present in middle of the central circle which the patient will need to respond to similar to those presented outside of the central circle.

5. Click on the box or press space bar to start the test

6. At the completion of the test, the user will be returned to the MRF Vision System dashboard

7. The test may be paused by clicking on the red cross

8. The user may cancel the test by clicking on the X in the upper left corner of the screen
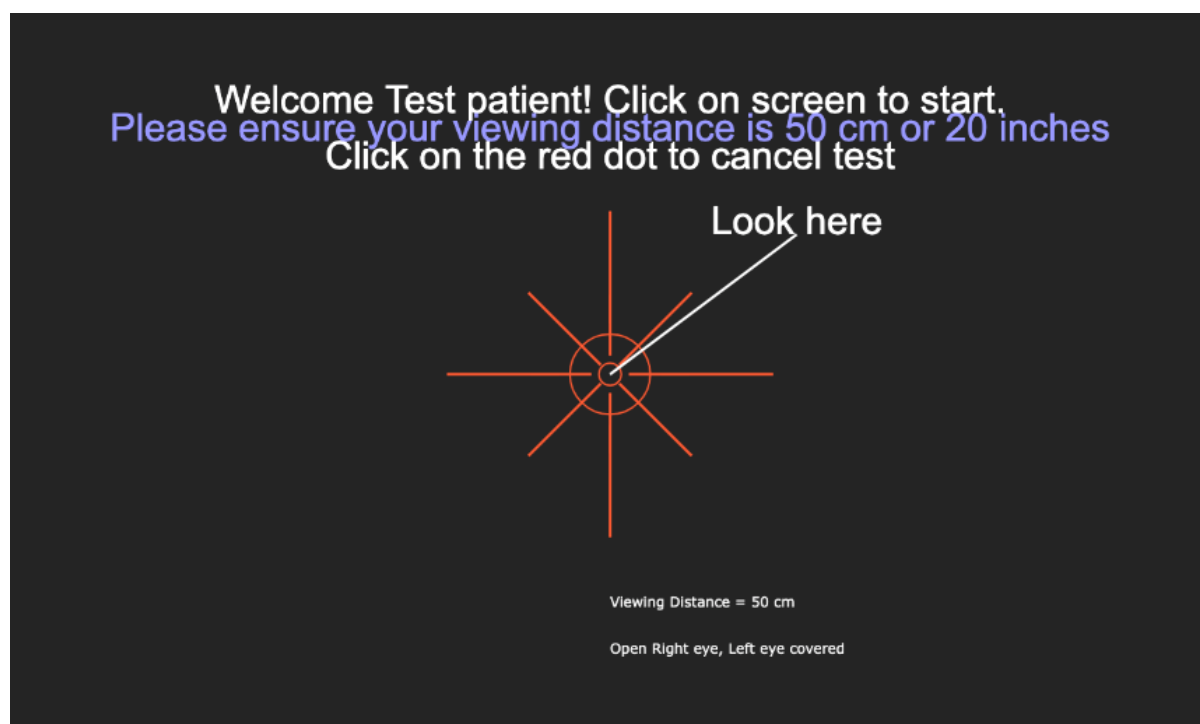
Figure 22. The macular field task (10-2).

8.5.2 Visual field test (10-2) results

An example of the visual field (10-2) output is given in Figure 23.

Figure 23. The 10-2 visual field printout.

Elements of the visual field printout are given below:

i. Patient details

ii. Reliability indices

iii. Test duration

iv. Eye tested

v. Numeric plot

vi. Gray scale

vii. Total deviation

viii. Pattern deviation

ix. Normative indicator

 Normal

 Borderline

Abnormal

x.   Global indices

8.5.3   Progression analysis

See section 9 (Progression analysis) for more information.

8.6   Low luminance low contrast acuity test

1. Ensure the patient has been set up according to the instructions provided in section 6

   (Setting up the patient) and occlude the non-testing eye

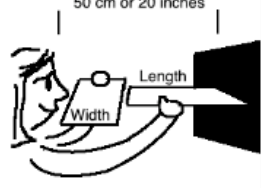2. Click on [Right eye] or [Left eye] to start the test (Figure 24)
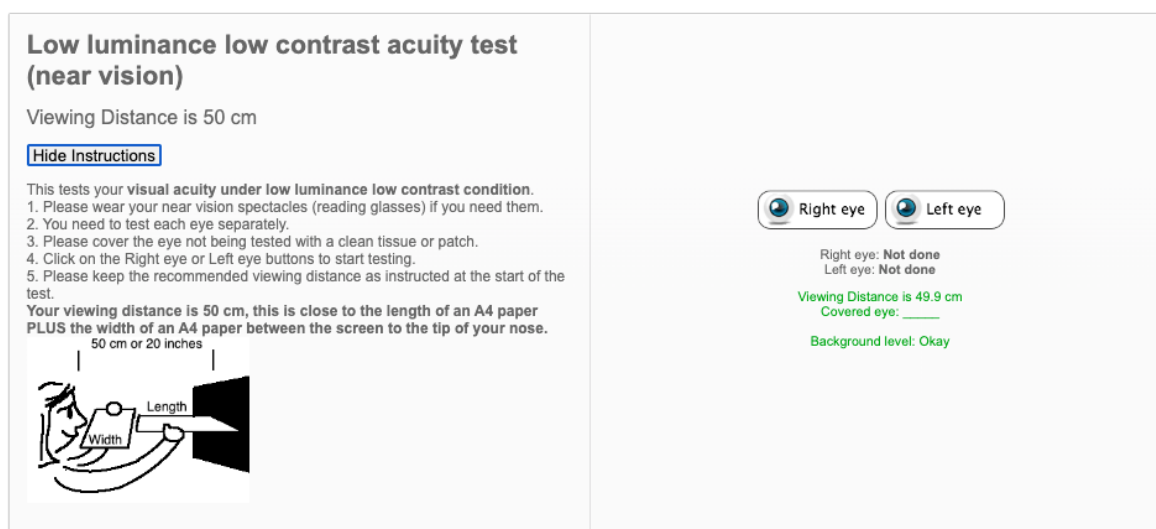
Figure 24. Step 5: Low luminance low contrast acuity test.

5. A tumbling E in a random orientation is presented to the patient in the middle of the

   screen (Figure 25)

6. Instruct the patient to click on the tumbling E (decreased luminance, low contrast

   background) at the bottom of the screen that corresponds to the orientation of the

   target. The target will get progressively smaller.

7. If the patient is unsure, they may click on the blue question mark

8. At the completion of the test, the user will be returned to the MRF Vision System

dashboard

Figure 25. The low luminance low contrast visual acuity task.

8.7 Visual field test (30-2)

8.7.1 Performing a visual field test (30-2)

1. Ensure the patient has been set up according to the instructions provided in section 6

(Setting up the patient) and occlude the non-testing eye

2. Click on [Right eye] or [Left eye] to start the test (Figure 26)

Figure 26. Step 6: The visual field test (30-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 27). The red cross may change positions during testing.

4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:

    a. click on the brown 'response box' (see Figure 27) with the mouse pointer, or;

    b. tap the space bar

    Note: An audible click will sound each time the patient registers a response

5. Click on the box or tab the space bar to start the test

6. At the completion of the test, the user will be returned to the MRF Vision System dashboard

7. The test may be paused by clicking on the red cross
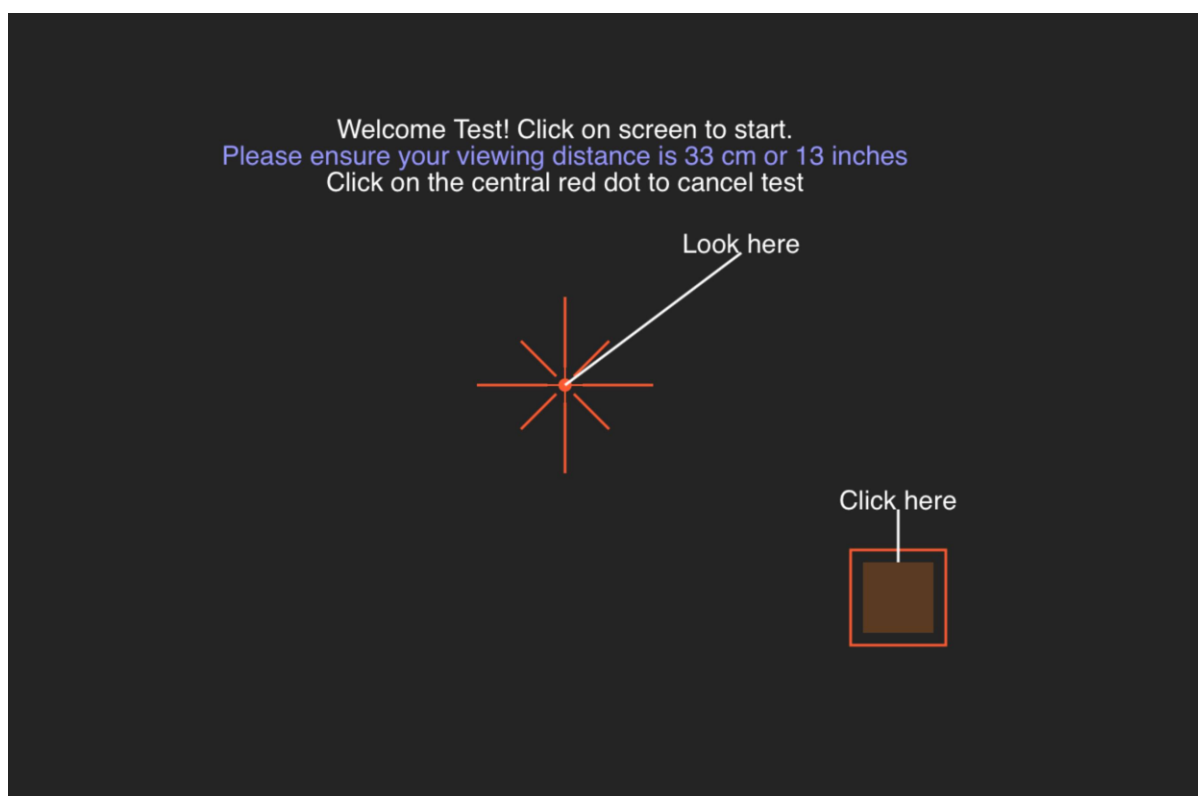
Figure 27. The visual field task (30-2).

8.7.2   Visual field test (30-2) results

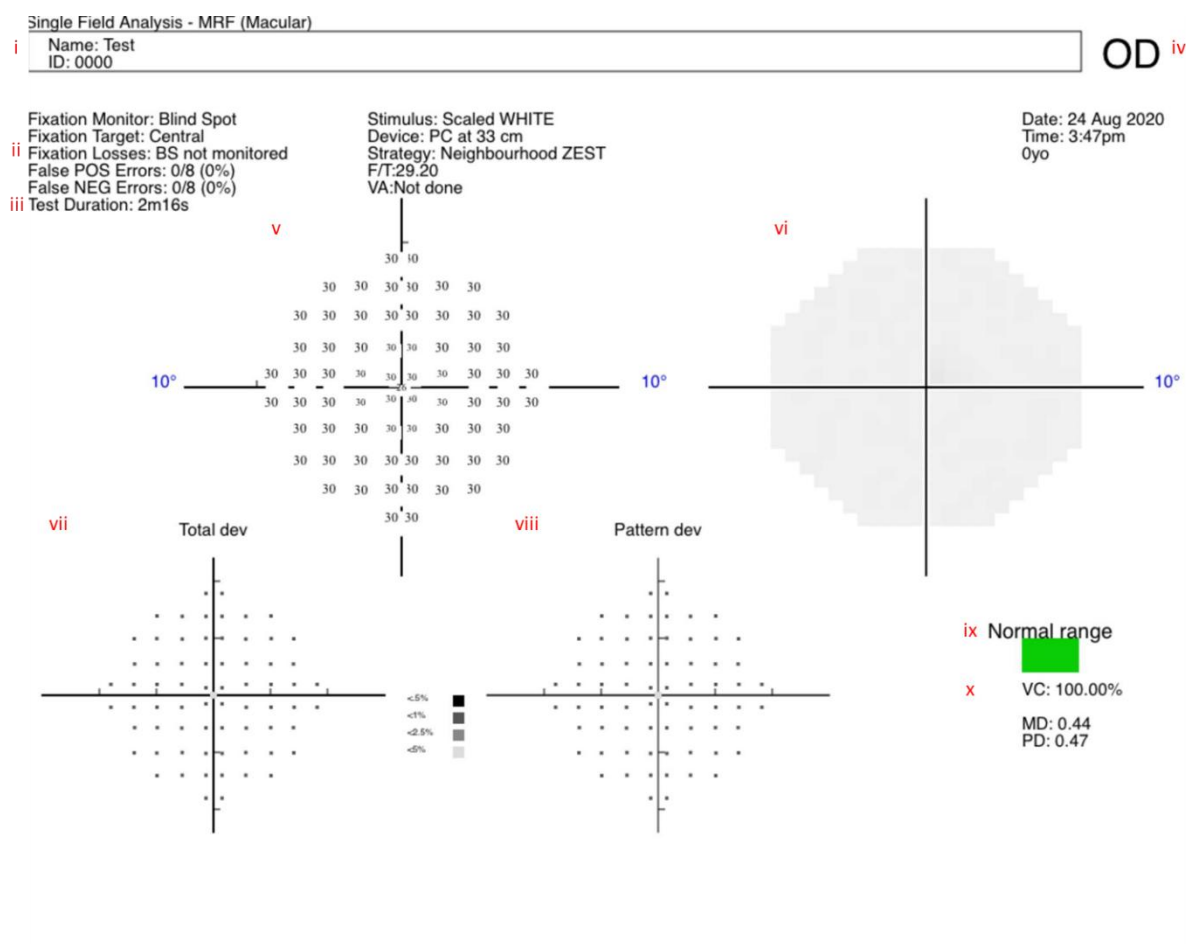An example of the visual field (30-2) output is given in Figure 28.
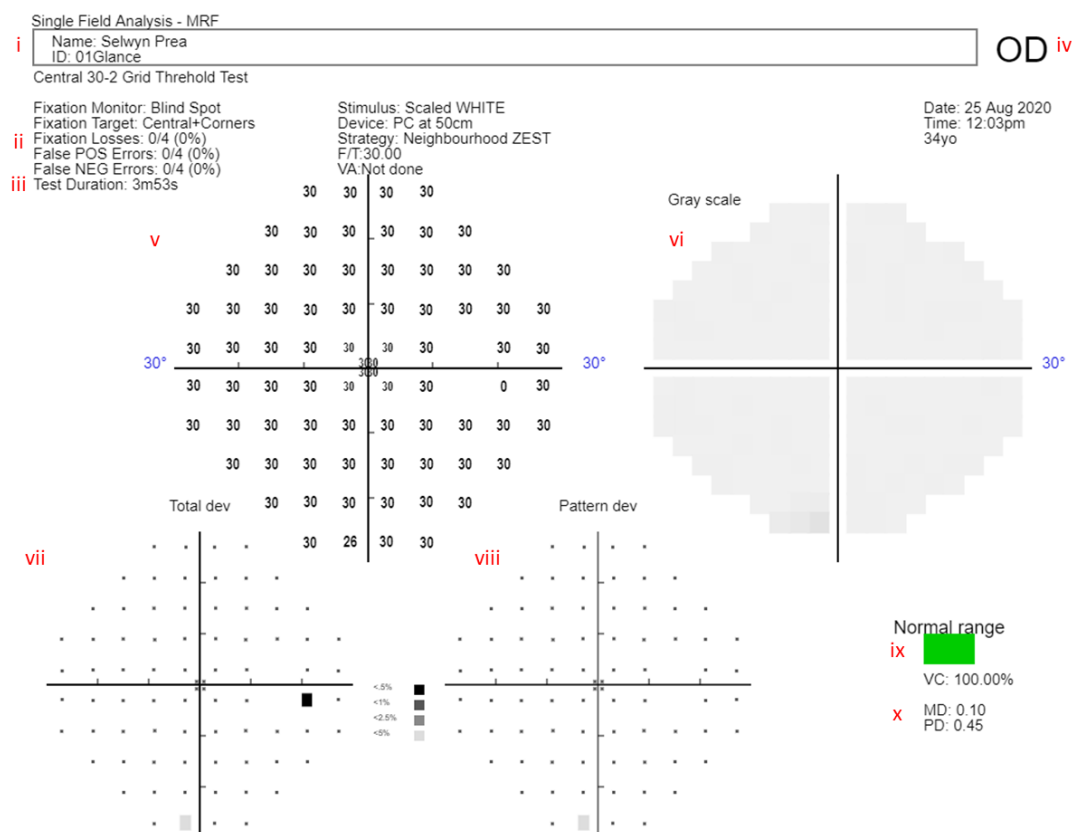
Figure 28. The 30-2 visual field printout.

Elements of the visual field printout are given below:

 i. Patient details

 ii. Reliability indices

 iii. Test duration

 iv. Eye tested

 v. Numeric plot

 vi. Gray scale

 vii. Total deviation

 viii. Pattern deviation

 ix. Normative indicator

    Normal

■ Borderline

■ Abnormal

x.   Global indices

8.7.3   Progression analysis

See section 9 (Progression analysis) for more information.

8.8   Binocular Esterman (Equiv.) field test

8.8.1   Performing a binocular Esterman (Equiv.) field test

1. Ensure the patient has been set up according to the instructions provided in section 6
    (Setting up the patient) and occlude the non-testing eye

2. Ensure that the computer screen has brightness of 300 nits with a minimum diagonal
    screen size of 27"

3. Click **on Both Eyes Button** to start the test (Figure 29)

Binocular Esterman (Equiv.) Field Test

Viewing Distance is 33 cm

Hide Instructions

This tests your **binocular visual field.**
1. Please wear your near vision spectacles (reading glasses) if you need them.
2. You need to test with BOTH eyes open.
3. Click Start Binocular Test button to start testing.
4. Please keep the recommended viewing distance as instructed at the start of the test.
Your viewing distance is 33 cm, this is close to the length of an A4 paper between the screen and the tip of your nose.

33 cm or 13 inches
Length

Both Eyes
Not done

Viewing Distance is 47.1 cm
Covered eye: _____

Background level: Okay

Figure 29. Step 6: The binocular Esterman (Equiv.) field test.

4. Instruct the patient to always fixate at the red cross during testing (Figure 30).

5. If a larger screen is used for the binocular test than 27 inch screen, user can click on Move farther to a attempt performing the binocular test at a more comfortable farther distance.

6. Each time a grey or white dot is flashed in their peripheral vision, the patient must:

   a. click on the brown 'response box' (see Figure 30) with the mouse pointer, or;

   b. tap the space bar

   Note: An audible click will sound each time the patient registers a response

7. Click on the box or tap the space bar to start the test

8. At the completion of the test, the user will be returned to the MRF Vision System dashboard

9. The test may be paused by clicking on the red cross

10. The user may cancel the test by clicking on the X in the upper left corner of the screen
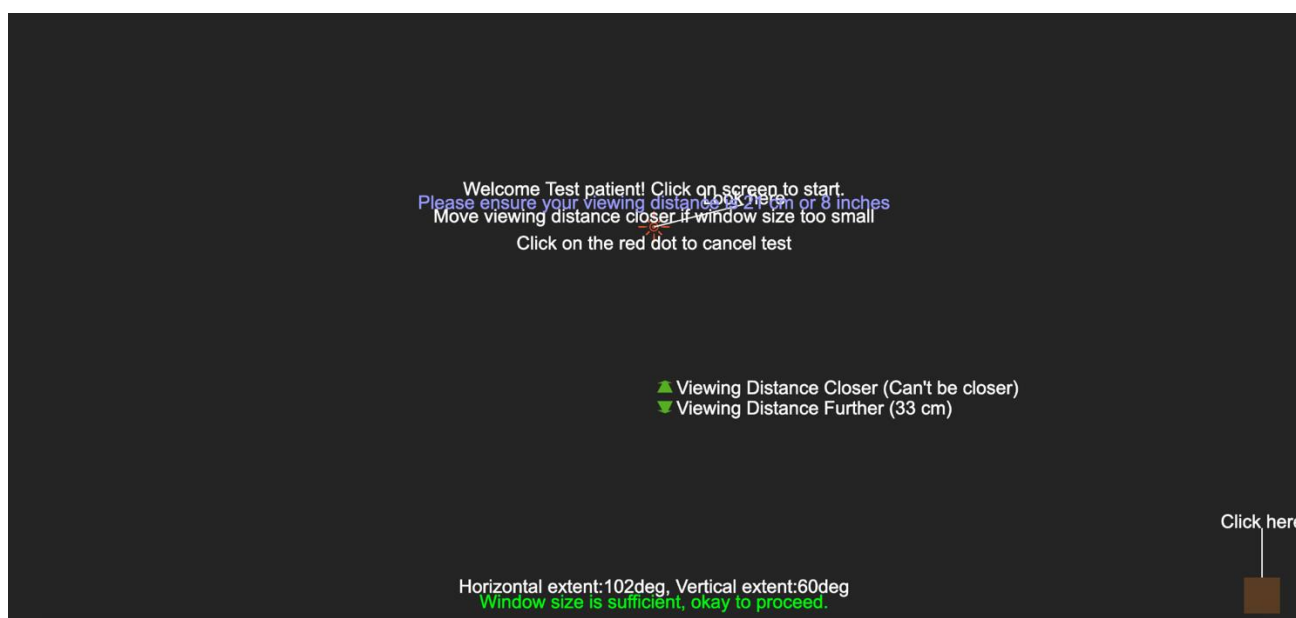
Figure 30. The binocular Esterman (Equiv.) visual field task.

8.8.2   Binocular Esterman (Equiv.) visual field test results

An example of the binocular Esterman (Equiv.) visual field test output is given in Figure 31.
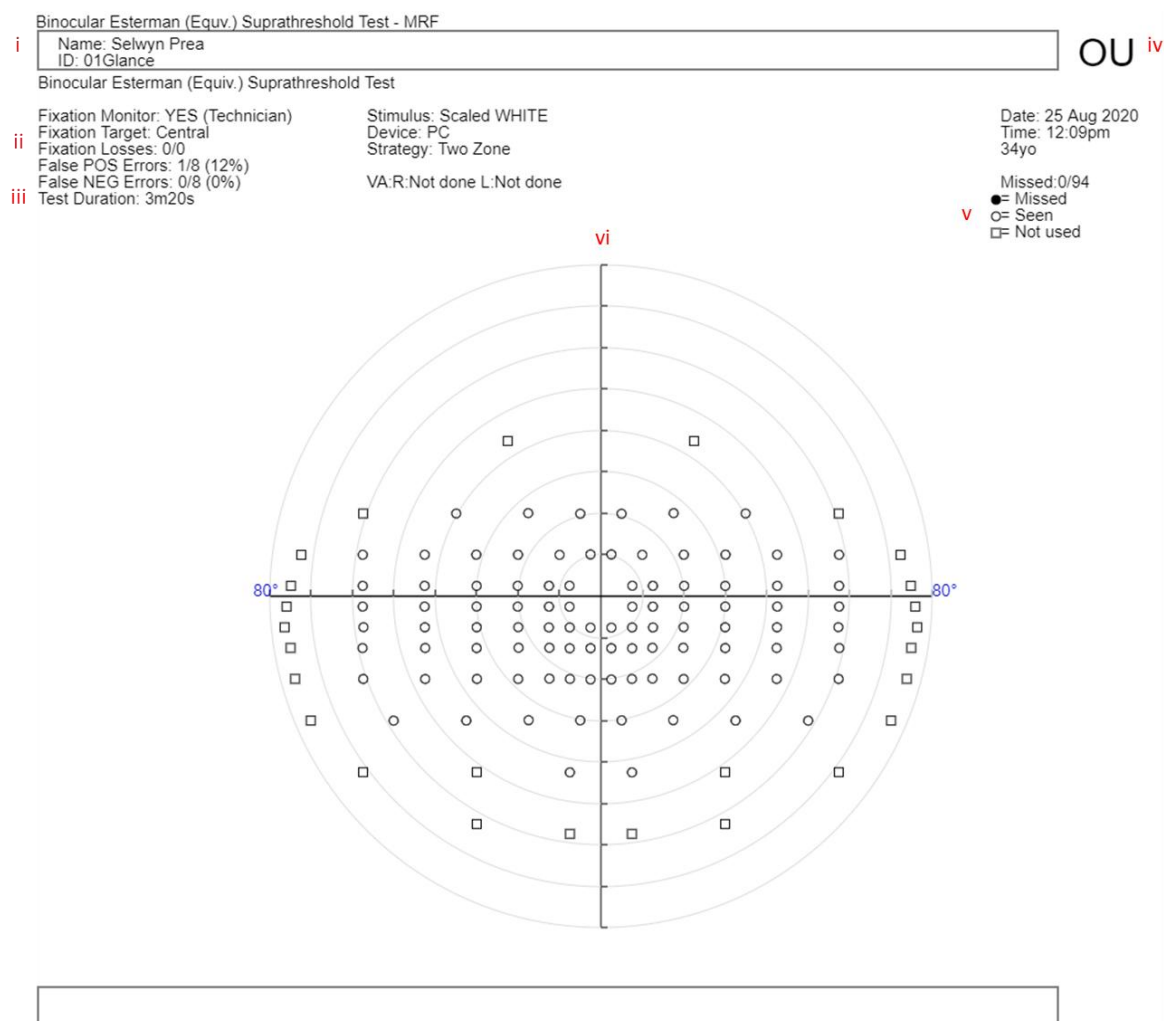
Figure 31. The binocular Esterman (Equiv.) visual field test printout.

Elements of the visual field printout are given below:

i.   Patient details

ii.   Reliability indices

iii.   Test duration

iv.   Eye tested

v.   Number of points seen/missed

vi.   Visual field plot

8.9   Save Test Section

Once all the desired vision tests have been completed, the user must click "Save this episode" to save all test results (Figure 32).

Figure 32. Step 8: Save Test.

9. Visual field progression

Progression analysis is available for the MRF in the Patient accounts section. The progression indicator is displayed on the results screen if at **least 5 exams** have been performed. MRF Online displays the patient's mean defect (MD) progression trend for the left and right eyes. A minimum of 5 exams is required for the progression trend to be calculated and displayed. An example of a progression trend for a patient's left eye is shown in Figure 33.
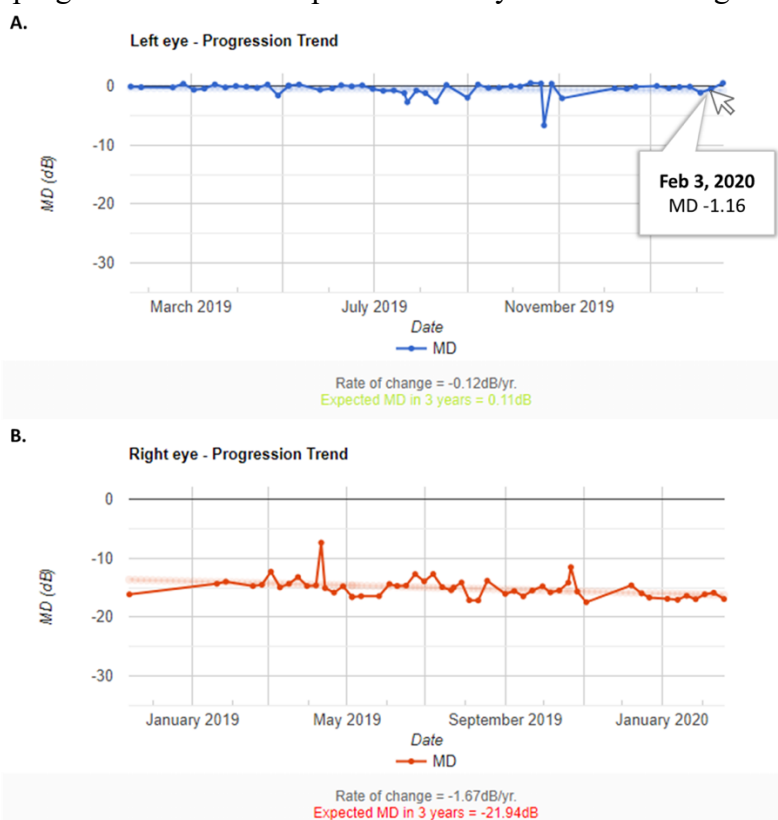
Figure 33. Example progression trends. A. Left eye progression trend for a normal eye. Note that hovering over a data point displays the date and MD for that test. B. Right eye progression trend for a glaucoma eye.

The x-axis for the progression trend graph (Figure 33) displays the time (month, year) and the y-axis represents the MD (dB). Note that a regression line is fitted through the data points. The rate of change is given as a value in dB/yr and the expected MD in 3 years is shown in dB.

Different Trend analysis can be displayed by selecting the corresponding link underneath the first trend analysis graph:

1. PD Progression – Show graph of Pattern Deviation trend

2. VC/VFI equ progression – show graph of Visual capacity (%) trend

3. Regional analysis Central MD progression - show progression of MD calculated

   from the central region

4. Regional analysis MD progression inf MD - show progression of MD calculated

   from the inferior region

5. Regional analysis MD progression sup MD - show progression of MD calculated

   from the sup region

Regional analysis provide more detailed analysis of the regional progression of visual field compared to overall MD trend analysis. However it is more robust to variabilities compared to point-wise event type analysis.

10. Telehealth

MRF Online offers users the option to undertake vision testing on patients via telehealth. This function is particularly useful when the patient cannot visit the doctor's practice in person. Prior to commencing a telehealth consultation, the user must do the following:

1. Generate a doctor code (see section 4.2 Generate doctor code)

2. Ensure that the patient has access to a device that meets the minimum system

   requirements to run MRF Online (see section 2.1 Compatible hardware and software)

3. Ensure the patient's device has speakers and that the volume is turned up

4. Provide instructions to the patient to ensure that they are set up correctly (see section

   6. Setting up the patient).
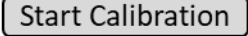
To perform vision testing on a patient using MRF Online's telehealth function, the user should do the following:

1. Log in to your MRF Online account (see section 3.2 Logging in to your account)

2. If the patient is a new patient, click Add Patient to create a new file (see section 4.6 Add patient). If the patient is an existing patient, search for their file in the Patient List (Figure 2 xii).

3. Click on the patient's unique ID to enter the patient account screen

4. Click **Topup** to add a test to the patient's account (Figure 9 viii)

5. Click **Edit Tests** and select the vision tests you wish the patient to perform (see section 5.2 Edit tests (telehealth))

6. Copy the simplified telehealth URL by clicking **Copy to clipboard**

7. Send the simplified telehealth URL to the patient (eg: via email)

8. Alternatively by pressing **Send Invite to Email** button user can send an invitation with the unique Telehealth URL to the patient's email address on record.

9. Ask the patient to access the URL. They will see the following screen:

Figure 35. The patient login screen for vision testing via telehealth.

10. Ask the patient to enter their 4-digit year of birth and click **Enter Telehealth**

11. Ask the patient to click **Start Test**

12. Instruct the patient to calibrate their screen by clicking Start Calibration (see section 8.1 Step 1: Screen Calibration)

13. The vision tests selected by the user in step 5 will be displayed to the patient. Instruct the patient to perform each of the vison tests, maintaining the correct working distance as indicated by the voice over, and occluding the non-testing eye. Refer to section 8. The MRF Vision System for more information on each vision test.

14. Once all vision tests have been successfully completed, ask the patient to click

    Save this episode

    The telehealth session is now complete. The user may review the patients results from the patient account screen.

11. Case Studies

11.1 Testing at the bedside

PRESENTATION

- 73-year-old female admitted to hospital with 3-week history of frontal headache and blur on left side
- Visual acuity and visual field testing performed at bedside with the MRF on an iPad

CLINICAL FINDINGS

- Visual acuity 6/18 OU (pinhole to 6/12)
- Dense superior bitemporal visual field loss (Figure 36) with MRF (confirmed with HFA 2 days later)
- MRI identified mass in pituitary region

FP: 0/8 (0%)   MD: -9.19
FN: 1/8 (12%) PD: 11.88
FL: 0/4 (0%)   VC: 68.42%
Test time: 4m29s

```
              0    0  | 0   22
          0  12   3  | 30  30  26
      0   0   0   3  | 30  30  30  30
      0  17  17  |30  30  30  30  26
                 180
                 226
     22      30   3  | 30  30  30  26
     30  12  26  26 | 30  30  30  30
          6  30  22 | 30  30  30
             22  17 | 0   6
```
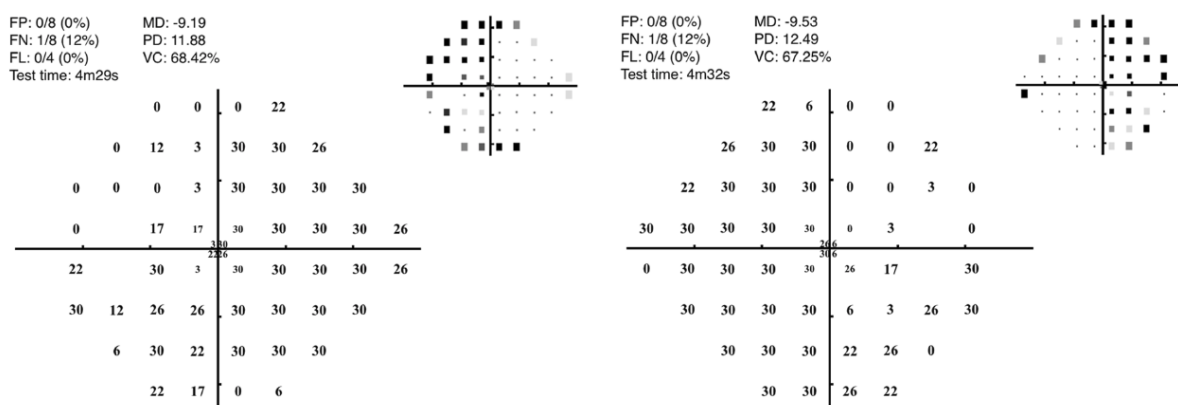
FP: 0/8 (0%)   MD: -9.53
FN: 1/8 (12%) PD: 12.49
FL: 0/4 (0%)   VC: 67.25%
Test time: 4m32s

```
              22   6  | 0   0
          26  30  30  | 0   0   22
      22  30  30  30  | 0   0   3   0
      30  30  30  30  |30   0   3       0
                      206
                      306
       0  30  30  30  |30  26  17      30
      30  30  30  30  | 6   3   26  30
          30  30  30  |22  26   0
              30  30  |26  22
```

Figure 36. MRF visual field test performed at bedside showing bitemporal visual field loss.

INTERVENTION

- Neurosurgical removal of pituitary mass

- Two weeks after surgery, visual acuity improved to 6/4 OD and 6/5 OS

- MRF visual fields vastly improved (Figure 37)

FP: 0/8 (0%)   MD: -1.08
FN: 0/8 (0%)   PD: 6.47
FL: 4/8 (50%) VC: 96.29%
Test time: 3m37s

```
          30  30  | 30  12
      30  30  30  | 30  30   0
  30   3  30  30  | 30  30  30  30
  30      30  30  |30  30  30   6
                  3030
                  3080
  30      30  30  |30  30  30  22
  30  30  30  30  | 30  26  30  30
      30  30  30  | 30  30
      30  30  | 30  30
```

FP: 0/8 (0%)   MD: -0.14
FN: 0/8 (0%)   PD: 4.22
FL: 0/6 (0%)   VC: 99.52%
Test time: 3m18s

```
          30  30  | 30  30
      30  30  30  | 30  30  30
  22  30  30  30  | 30  30  30  30
  30  30  30  30  |30   30  30      26
                  3080
                  3080
  30  30  30  30  |26   30  30       0
  30  30  30  30  | 30  30  30  30
      26  30  30  | 30  30  30
      22  30  | 30  30
```
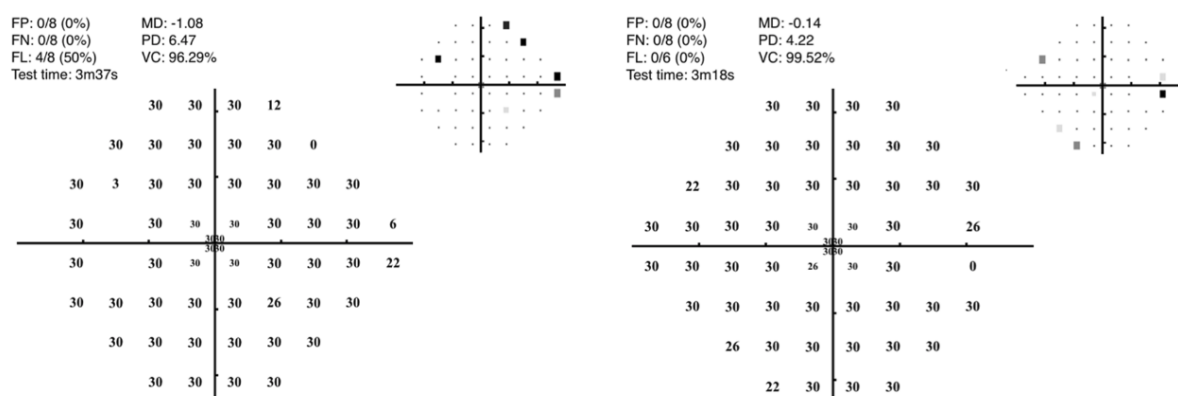
Figure 37. MRF visual field test performed 2 weeks after surgery showing vastly improved results.

11.2 Telehealth in action

PRESENTATION

- 68-year-old female with 3-month loss of vision in upper visual field

- Concerned about contracting COVID-19, did not want to come into clinic unless necessary

- Visual acuity and 24-2 visual field tests ordered via telehealth with MRF Online

CLINICAL FINDINGS

- MRF visual acuities were 6/4.8 OD and 6/19 OS

- Visual fields were normal OD but a superior scotoma that crossed the vertical midline was observed OS (Figure 38)

- Patient was instructed to attend clinic where dilated fundus examination revealed an inferior retinal detachment OS
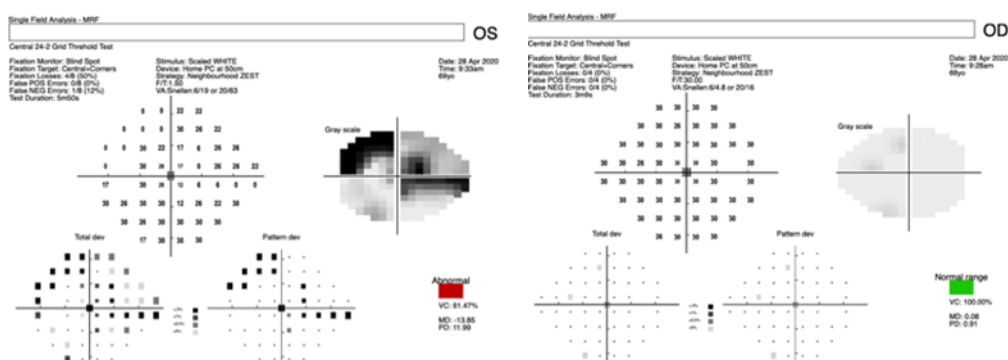

Figure 38. MRF Online 24-2 visual field test showing superior defect that crosses the midline in OS.

INTERVENTION

- Urgent referral to retina specialist

11.3 Self-monitoring for progression

PRESENTATION

- 59-year-old female with uveitic glaucoma OU

- Prescribed MRF to monitor her visual fields on a weekly basis using an iPad at home

CLINICAL FINDINGS

- Progression analysis returns a flat slope for the linear trend OD (Figure 39)

- Abnormal MD (-19.8 dB) observed in OS confirming the presence of glaucoma and shows a significant downward trend (-2.1 dB/yr)

- Change was identified in 4 months, well before the next scheduled clinical review which was due 2 months later
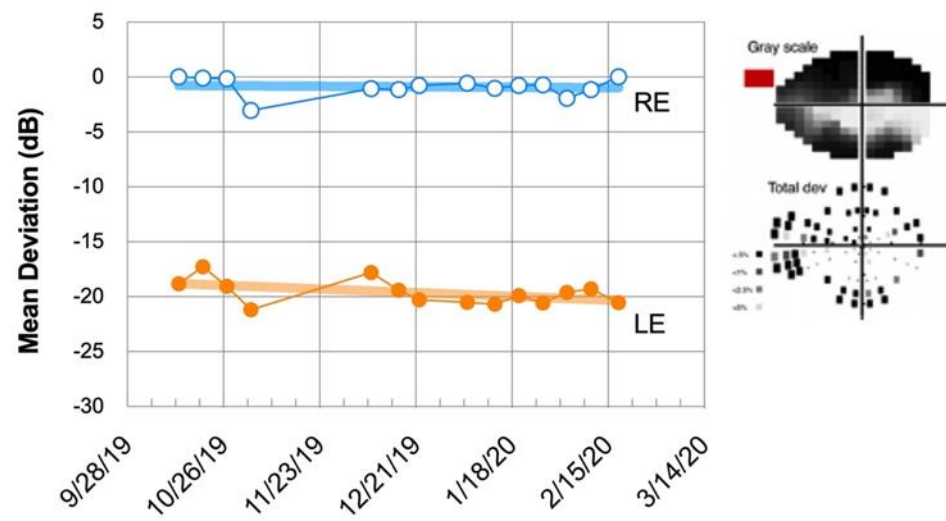

Figure 39. A 4-month time series returned by a patient having unilateral glaucoma who self-monitored using an iPad at home.

INTERVENTION

- Patient called in to clinic early for medical treatment of a uveitic episode

12. Summary of tests

		MRF Glaucoma app	MRF Neural app	MRF Macular app	MRF Diabetes app	MRF Online
Visual Acuity	High contrast	✓	✓	✓	✓	✓
	Low Luminance	✗	✓	✓	✓	✓
	Acuity in noise	✗	✓	✗	✗	✗
Visual Fields	10-2	✓	✗	※	✗	✓
	24-2	✓	✓	✗	✓	✓
	30-2	✗	✗	✗	✗	✓
	Driving test[1]	✗	✗	✗	✗	✗
	Screening	✓	✗	✗	✓	✓
	Red targets	✗	✓	✓	✓	✓
	Reliability Indices[2]	✓	✓	✓	✓	✗
	Progression[3]	✓	✓	✓	✓	✓
	Multi-lingual	✓	✓	✓	✓	✓
Other Features	Amsler	✗	✗	✓	✗	✗
	Neglect	✗	✓	✗	✗	✗
	Telehealth	✗	✗	✗	✗	✓
	Portability	✓	✓	✓	✓	✓
	Runs Offline	✓	✓	✓	✓	✓
	Data Storage	iPad/cloud	iPad/cloud	iPad/cloud	iPad/cloud	cloud

MRF for iOS minimum device requirements: iPad 3 WiFi. [1]Only for proper screen size or dual screen mode. [2]FP, FN and FL. MRF macular: FP and FN only. [3]Min 5 tests required. ※Offers radial grid similar to MaIA microperimeter.

13. Support

Glance Optical Pty. Ltd.
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Melbourne
Victoria 3000
Australia
Phone: +61 (0) 404 325 297
Website: www.visioninhome.com   www.visioninhome.au
Email: info@glance-optical.com

Australian Representative
To purchase a pack of MRF tests, contact our distributor:
Designs for Vision (Paragon Care)
50-54 Clayton Rd
Clayton, VIC 3168
Australia
Phone: +61 (0) 427 533 343
Website: www.dfv.com.au
Email: cameron.loveless@dfv.com.au

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00153 Rome
Italy
The Glance Optical EU Authorised Representative Agreement, FRM-062 is retained within the QMS.

UK Representative – Responsible Person
Donawa Lifescience Ltd (UK)
Aviation Business Park
Christchurch BH23 6NX
UK
The Glance Optical Pty Ltd UK Responsible Person Agreement, FRM-063 and Letter of Designation FRM-064 are retained within the QMS.

India Representative
For our India customers, please contact AppView Email:prakash@appviewmrf.com
AppView Site (www.appviewmrf.com)

Note: The information in this manual is true and correct as at September 2025. Glance Optical Pty. Ltd. reserves the right to alter this information at any time without notice.
Document Prepared by George Kong.
Approved by Algis Vingrys.

14. Glossary of terms

App	Application.
dB	Decibel.
iOS	Operating system of the Apple iPad.
MRF	Melbourne Rapid Fields
MRF tests	The subscription fee which enables a user access to perform a vision test with MRF. Testing of the R and L eyes will deduct one test from the patient's account.
Patient	The person who will be performing the test.
User	The person who will be administering the test (eg: Optometrist, Ophthalmologist, Doctor, etc).

Ltd.