

---

# EyeCheckup - Artificial Intelligence-Supported Retinal Disease Screening and Diagnostic Software Device

---

## User Manual

Note: The information in this manual only applies to the above-marked version of the EyeCheckup software. It does not apply to earlier versions. Due to continuing product innovation, specifications in this manual are subject to change without notice.

© 2021 URAL Telekom Inc. All rights reserved.

Information contained in this document is proprietary to URAL Telekom Inc. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form, in whole or in part, by any means electronic, mechanical, or otherwise, including photocopying and recording, for any purpose without written permission.

## Copyright Information

The copyright of all Licensed Software is protected by the contracts made by URAL Telekom. Unless specifically stated in the License Authority, no rights under copyright can be transferred to the customer.

## Confidentiality and Proprietary Right

This document is the private property of URAL Telekom. Information provided within this document by URAL Telekom is only for use by dealers, customers, and employees and therefore it must be used in accordance with the conditions in this written document. Access to and use of this document is restricted to dealers, customers and employees. The user of this document agrees to protect the confidentiality of the information mentioned in this document and to protect URAL Telekom's property rights stated herein and not allow the use of this document by any person other than to assist the use of URAL Telekom software. Under no circumstances may this document or any subject matter herein be accessed, made available, reviewed, or reproduced for the purpose of developing, marketing, or supporting a system or computer program similar to the EyeCheckup software. No part of this document can be reproduced without the written permission of URAL Telekom. The information in this document is subject to change without notice by URAL Telekom.

Subplots of material in this document should be consulted at



### URAL Telekom Inc.

Pınarbaşı Mah. Hürriyet cad. Akdeniz Üniversitesi  
Antalya Teknokent Ar-Ge 2 Uluğbey Binası  
No:3A/Z14, 07070 Konyaaltı/ANTALYA



01/2022

For questions or help contact URAL Telekom at +09 (0535) 766-6383 or email [info@eyecheckup.com](mailto:info@eyecheckup.com)



[Watch on youtube under the name "EyeCheckup - AI Based Eye Screening System".](#)

## Publication Date and Document Number

Publication Date: 15 Jan 2022

Document Number: UG.003

URAL Telekom quality management system assessment complies with ISO 13485:2016 international standards and (EU) 2017/745 Medical Devices Regulation Annex-IX part 2.

**TABLE OF CONTENTS**

<b>1. MANUAL INFORMATION</b>	<b>6</b>
1.1. Revision History	6
1.2. Purpose	6
1.3. Intended Audience	6
1.4. How to Obtain a Paper Copy of This Manual	6
1.5. Definitions	6
1.6. Glossary of Symbols	7
<b>2. WARNINGS AND PRECAUTIONS</b>	<b>8</b>
2.1. Prerequisites	8
2.2. Warnings	8
<b>3. SAFETY</b>	<b>10</b>
3.1. Cleaning and Disinfection	10
3.2. Storage and Handling Conditions	10
3.3. Performance	10
3.4. Ergonomics	10
3.5. System Security	10
<b>4. ABOUT EYECHECKUP</b>	<b>11</b>
4.1. Intended Use / Indication For Use	11
4.2. Contraindications	11
4.3. Side-effects	11
4.4. Intended Audience	11
4.5. Clinical Benefits	11
4.6. Device Outputs and Definitions	11
4.7. Limitations of Use	14
4.8. Product Contents	14
4.9. Product Lifetime	14
4.10. Principles of Operation	14
4.11. References	14
4.12. Retinal color image quality guidance	15
<b>5. INSTALLATION</b>	<b>17</b>
5.1. System Requirements	17
5.2. Reference Requirements	18
5.3. Installation	19
5.4. Registration	19
5.5. Software Updates	20
5.6. Camera Settings	20
<b>6. INTRODUCTION</b>	<b>21</b>
6.1. Login	21
6.2. Home Screen	21

6.3. Search	23
<b>7. PATIENT DETAILS</b>	<b>25</b>
7.1. Creating a New Patient Record	25
7.2. Working with Existing Patients	25
7.3. Editing Patient Details	26
7.4. Creating a New Study	26
7.5. Deleting the Study	27
7.6. Deleting the Patient Record	28
7.7. Undelete	28
7.7.1. Undelete Selection in Image Settings Box	29
7.7.2. Patient Record Recovery	29
7.7.3. Study Record Recovery	29
<b>8. STUDY DETAILS</b>	<b>30</b>
8.1. Capture	30
8.2. Images in the Import folder	31
8.2.1. Submission Criteria	31
8.2.2. Automatic Importing Images for Analysis	31
8.2.3. Manually Importing Images for Analysis	31
8.3. Analysis	33
8.3.1. Sending Analysis Request	33
8.3.2. Getting Analysis Results	33
8.4. Getting Analysis Report PDF	36
8.5. Analyzing a Patient With a Single Eye	36
8.6. Viewing Analysis Results via QR code	36
8.7. Viewing and Printing Images	36
8.8. Deleting Images	37
8.9. Exporting Images	38
8.10. Thumbnail Image View	39
8.11. Viewing Image as Large Image	39
8.12. Printing Images	40
<b>9. SETTINGS</b>	<b>41</b>
9.1. Physician and Ophthalmic Photographer Maintenance	41
9.2. Image Settings	42
9.2.1. General Options	43
9.2.2. Image Preview Settings	43
9.2.3. Capture Settings	44
9.2.4. Post import	44
9.2.5. Capture 2 Settings	45
9.2.6. Post Import '2'	45
9.3. Right Side Buttons	46
9.4. Archive and Backup	47

---

9.4.1. Storage Type	47
9.4.1.1. Remote Storage Only	47
9.4.1.2. Backup Only	48
9.4.1.3. Purge Local Copies	48
9.4.1.4. Date Filter	48
9.4.2. Archive Images	49
9.4.3. Backup Database	49
9.4.4. Archive and Backup Settings	49
9.4.4.1. Backup folder section	49
9.4.4.2. Directory Path	50
9.4.4.3. Archive Label	50
9.4.4.4. Backup database	50
9.4.4.5. Automatic backup section	50
9.5. Viewing Archived Images	51
9.6. Activity Log	51
<b>10. AUTOMATIC TRANSFER FOR EHR/EMR</b>	<b>53</b>
10.1. Transfer Options	53
10.2. Target Settings	54
<b>11. REQUEST SUPPORT</b>	<b>56</b>
<b>12. SERVICE AND MAINTENANCE</b>	<b>58</b>
<b>13. EYECHECKUP TROUBLESHOOTING</b>	<b>59</b>
<b>14. GLOSSARY</b>	<b>60</b>

## 1. MANUAL INFORMATION

### 1.1. Revision History

Rev No	Software Version	Description	Date
00	1.0	First issue	15.01.2022
01	1.0	The intended use has been revised.	04.04.2023
02	1.0	The intended use has been revised. Target user group detailed	15.07.2023

### 1.2. Purpose

This manual contains the instructions necessary to operate the EyeCheckup software device in accordance with its function and intended use.

### 1.3. Intended Audience

This manual is intended for anyone who uses, maintains, or troubleshoots this device.

### 1.4. How to Obtain a Paper Copy of This Manual

To request a printed copy of the guide, please contact Ural Telekom at [info@eye-checkup.com](mailto:info@eye-checkup.com). Kindly provide your organization's name, full address, the product you want the guide for, and the software version you need. Ural Telekom will send you a printed version of the guide via mail, free of charge, within one week.

### 1.5. Definitions

vtDR	Vision-threatening diabetic retinopathy (vtDR) is severe non-proliferative retinopathy (NPDR), proliferative retinopathy (PDR), and/or macular edema, as defined in the AAO PPP
mtmDR	More than mild diabetic retinopathy (mtmDR) is moderate non-proliferative retinopathy, severe non-proliferative retinopathy (NPDR), proliferative retinopathy (PDR), and/or macular edema, as defined in the AAO PPP
AAO	The American Academy of Ophthalmology is a global community of eye physicians and surgeons that set eye-care standards.
PPP	The preferred practice pattern (PPP) is the AAO management recommendation for patients with diabetes.
GUI	Graphical User Interface

1.6. Glossary of Symbols



**Warning** - Indicates a potentially hazardous situation associated with the use or misuse of the device which, if not avoided, could result in serious injury, death, or serious other adverse reaction.



**Consult Manual Before Use**



**Manufacturer**



**Date of Manufacture**



**Medical Device**



**UDI**

## 2. WARNINGS AND PRECAUTIONS

### 2.1. Prerequisites



This User Manual is an integral part of the product and explains the intended use of the product. Acting according to the guidelines is a prerequisite for optimal product performance and proper functioning. It is intended to ensure safe usage of the device by the patient and operator.

**For a user to interact with EyeCheckup Client safely and according to the intended purpose, the following prerequisites must be met:**

- A computer running a Microsoft Windows Operating System (Windows 10 or newer)
- A working internet connection
- You should be acquainted with the use of fundus cameras.
- EyeCheckup should be installed according to the instructions in Section 5 of this User Manual.
- The user must read and understand the Intended Use, Warnings, and Operating instructions.

### 2.2. Warnings



**The following warnings apply to all aspects of the EyeCheckup software device:**

- EyeCheckup is only designed to detect diabetic retinopathy. Patients should not rely on EyeCheckup for the detection of any other disease.
- Patients should be informed that EyeCheckup does not treat retinopathy and that their images are analyzed to determine whether further examination is needed by an eye care provider. Physicians should review EyeCheckup results and advise patients of recommended referrals to an eye care provider for evaluation and potential treatment.
- If the EyeCheckup system is not able to generate a detection result on a patient due to poor quality of images, such a patient may be retested immediately after pharmacologic dilation. If dilation is not possible or if the EyeCheckup system still does not generate a detection result, such a patient should be referred to an eye care provider for evaluation since the patient may have vision-threatening diabetic retinopathy or other abnormalities including cataracts.
- Patients with an EyeCheckup output indicating diabetic retinopathy should be immediately referred to an eye-care provider for further screening and treatment. In cases where the EyeCheckup test provides no result, the patient should always be immediately re-tested or referred to an eye care provider. In cases where the EyeCheckup test does not detect the referable disease, the patient should be encouraged to test again with EyeCheckup at an appropriate point in 12 months after eye screening.

- 
- Independent of the EyeCheckup result, patients should be advised to immediately report to an eye care provider if he/she experiences vision loss, blurred vision, floaters, or any other symptom of eye disease that requires the attention of an eye care provider.
  - Do not use EyeCheckup to screen for diabetes mellitus – EyeCheckup is only for use in people already diagnosed with diabetes mellitus.
  - EyeCheckup performs computerized interpretation of retinal images. EyeCheckup can miss retinopathy in some cases (false negatives), and erroneously flag retinopathy in others where there is none (false positives).
  - EyeCheckup is designed to work with good quality, in-focus, digital retinal color images centered on the fovea and disc. Do not submit retinal color images that are of poor quality, retinal color images that were not captured with a digital fundus camera, retinal images that are not in color, images of other tissues or objects other than the retina, or color images that were obtained by scanning images.
  - The user is responsible for ensuring that the corresponding images and filenames for a particular patient are labeled appropriately to avoid mistaken identity with respect to EyeCheckup results.
  - Users should regularly ensure that EyeCheckup Client software is operating on a computer that is free of viruses or malware and is updated with the latest security patches.
  - EyeCheckup is intended to be used with images acquired with ophthalmic cameras. Refer to the FDA-approved label of the cameras which depicts relevant contraindications, warnings, and precautions.
  - The information relevant to only some versions of the product is accompanied by the version number of the respective product. The version number is located on the opening screen of the product. Since we do not perform mass production, the products are not referred to as the same lot or batch of products, but as "products with the same version".
  - The guarantee does not cover damage resulting from the use of consumables from other manufacturers.
  - URAL Telekom; Responsible for the safety, reliability, and performance of the product only if the following conditions are met:
    - i. if assembly operations, additions, re-adjustments, modifications, or repairs were carried out by persons authorized by URAL Telekom,
    - ii. If the electrical installation of the relevant room complies with the appropriate regulatory requirements,
    - iii. the device is used in accordance with the instructions for use.
  - The manufacturer is not responsible for any defects caused by the use of connecting cables other than those recommended, unauthorized changes or modifications made to software or equipment, malware and viruses. Such unauthorized changes or modifications could void the user's authority to operate the equipment whether they happened knowingly or unknowingly.

### 3. SAFETY

#### 3.1. Cleaning and Disinfection

Recommend covering devices when not in use to prevent dust accumulation. Remove any dust accumulation on the device with a lint-free cloth. Alcohol wipes should be used to remove any dirt or stain.

#### 3.2. Storage and Handling Conditions

There are no known specific storage and handling conditions for this medical device.

#### 3.3. Performance

The measures to be taken in case of changes in the performance of the device are as follows:

- The database must be backed up.
- Using the archiving feature, all images should be archived.
- The disk fill rate should be checked.
- If the disk is about to be full, it should be ensured that previously archived images are removed from the computer by using the Archive feature.
- The presence of malicious software should be checked on the computer and a virus scan should be performed.

**NOTE:** No other software should be installed on the computer where **EyeCheckup** is installed, without the knowledge of the manufacturer company, these operations may break the system and the device will be out of warranty.

#### 3.4. Ergonomics

Improper or prolonged keyboard or mouse use may result in injury. Watching the monitor screen for a long time can cause eye strain. Users must follow the Ergonomics Guidelines specified by the vendor/manufacturer of PC equipment.

#### 3.5. System Security

The safety statements presented in this section are generally related to equipment. Additional security notifications specific to specific processes of the product can be found in the relevant section describing that process.

##### **Prescription use only**

Laws restrict this device to sale by or on the order of a physician or user.

##### **Software Security**

A unique product key is required to operate the EyeCheckup package.

##### **Service**

For service questions, contact authorized factory-trained service personnel. No user-serviceable components are enclosed.

## 4. ABOUT EYECHECKUP

### 4.1. Intended Use / Indication For Use

EyeCheckup is indicated for use by healthcare providers to automatically detect mtmDR (more than mild diabetic retinopathy) and vtDR (vision-threatening diabetic retinopathy - severe non-proliferative diabetic retinopathy or proliferative diabetic retinopathy and/or diabetic macular edema) in the eyes of adults (18 years of age or older) diagnosed with diabetes who have not been previously diagnosed with diabetic retinopathy.

EyeCheckup has been developed for use with retinal fundus images and is optimized with Canon CR-2 AF, Topcon TRC-NW400, and Optomed Aurora fundus cameras. EyeCheckup can visualize the detected anomalies to help doctors understand how diabetic retinopathy detection was made.

### 4.2. Contraindications

EyeCheckup software has no contraindications other than the contraindications of fundus cameras to which images will be taken. See the contraindications of fundus cameras.

### 4.3. Side-effects

There are no known side effects caused by using this device.

### 4.4. Intended Audience

EyeCheckup is indicated for use by healthcare providers. Typically, the EyeCheckup operator is a technician, assistant, or employee at healthcare providers' offices/clinics. This device may only be used in accordance with its intended use.

It is assumed that users are familiar with Windows operating systems, common GUI usage, and navigation.

### 4.5. Clinical Benefits

EyeCheckup is an image post-processing software that uses original fundus camera images to support clinicians in the evaluation and assessment of DR symptoms.

### 4.6. Device Outputs and Definitions

The EyeCheckup device will produce one of three disease outputs:

1. **Vision-threatening diabetic retinopathy detected:** A result of vision-threatening diabetic retinopathy (vtDR) indicates a high risk of severe non-proliferative diabetic retinopathy or proliferative diabetic retinopathy and/or diabetic macular edema.
2. **More than mild diabetic retinopathy detected:** A result of more than mild diabetic retinopathy (mtmDR) indicates a high risk of moderate non-proliferative diabetic retinopathy.
3. **Negative:** A Negative result indicates a low risk of having vtDR or mtmDR and a high likelihood of no or minimal retinopathy.

The EyeCheckup Analysis Report will provide one of two results:

Exam Result	More than mild diabetic retinopathy or Vision-threatening diabetic retinopathy detected:  <b>Refer to an eye care professional.</b>
Exam Result	Negative for more than mild diabetic retinopathy or Vision-threatening diabetic retinopathy:  <b>Retest in 12 Months after eye screening.</b>

The AAO PPP (2017) recommends annual retinal screening for people with diabetes who are negative for mtmDR, which includes normal or minimal NPDR and mild NPDR, while those with mtmDR detected require more than an annual screening. According to the AAO PPP, moderate Non-Proliferative Diabetic Retinopathy (NPDR) is the lowest level of DR that requires more than annual screening by an eye care professional. EyeCheckup aligns with this criterion by detecting more than mild Diabetic Retinopathy (mtmDR) and vision-threatening Retinopathy (vtDR). The EyeCheckup device will also indicate when the EyeCheckup Analysis can not be accurately performed using one of the following two outputs:

### 1. Exam Quality Insufficient

Exams that are not of sufficient quality to rule out disease are identified so that patients can be re-imaged non-mydratically or re-imaged once pharmacological dilating drops have been administered. EyeCheckup will provide one of the following reasons why the exam was insufficient:

- Image Quality Issue: Image quality in at least one image was insufficient.
  - EyeCheckup determined that at least one of the images had insufficient image quality to rule out the presence of disease.
- Image Quality Issue: The number of detected left and right eye images did not meet protocol.
  - EyeCheckup could not identify two images of the left eye and two images of the right eye in the submission.
 

**Note:** Analysis is allowed for single-eye patients.
- Image Quality Issue: Optic disc location in at least one image was incorrect.
  - EyeCheckup expects the optic disc to be visible and to be within a horizontal band covering the middle third of the image.
- Image Quality Issue: At least one image could not be processed.
  - EyeCheckup was not able to process at least one of the images in the exam. This is usually due to image quality problems.



**Warning:** Patients who receive a result of “Exam Quality Insufficient” after following the EyeCheckup imaging protocol and troubleshooting should be referred to an eye care professional for evaluation.

## 2. Exam Analysis Failed

A result indicating that the exam analysis failed means that EyeCheckup was not capable of analyzing the images in the exam.



**Warning:** After following the EyeCheckup imaging protocol, if the EyeCheckup exam analysis required to provide exam results cannot be completed, it will indicate Technical Error. In such cases, the PDF report cannot be generated, and the analysis may be retried after checking internet connectivity. If the error persists, it is recommended that the images be manually reviewed by trained personnel or the patient be referred to an eye-care professional.

### 4.7. Limitations of Use

EyeCheckup must be operated in an environment where the minimum specified requirements for hardware and network performance are met.

### 4.8. Product Contents

EyeCheckup Client

### 4.9. Product Lifetime

URAL Telekom will continue to support EyeCheckup for at least one year after the latest version update.

### 4.10. Principles of Operation

After installation, the EyeCheckup Client software connects to the EyeCheckup Service and Analysis system. To submit exams to the device, retinal images are selected in the EyeCheckup Client. In order to process the exam, EyeCheckup Client needs to be connected to the internet. The EyeCheckup Client sends the exam securely over the internet to URAL Telekom servers for processing. A result report and associated recommendation are then immediately generated, after processing, at the point of care by the EyeCheckup Client. The results of the clinical decision can then be viewed in the EyeCheckup Client. To perform an analysis, the EyeCheckup Client must be authorized with a registration code which must be obtained from URAL Telekom and the user must have an active EyeCheckup account.

### 4.11. References

For further information on the guidelines and grading that are foundational to EyeCheckup, please see the AAO Preferred Practice Pattern (2017 edition) for people with diabetes ([www.aao.org/preferred-practice-pattern](http://www.aao.org/preferred-practice-pattern)) and the following publications:

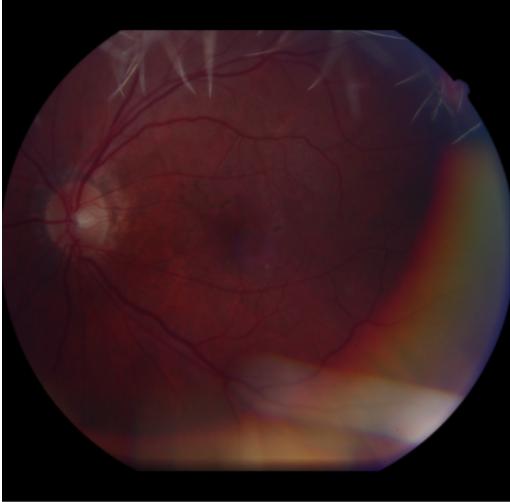
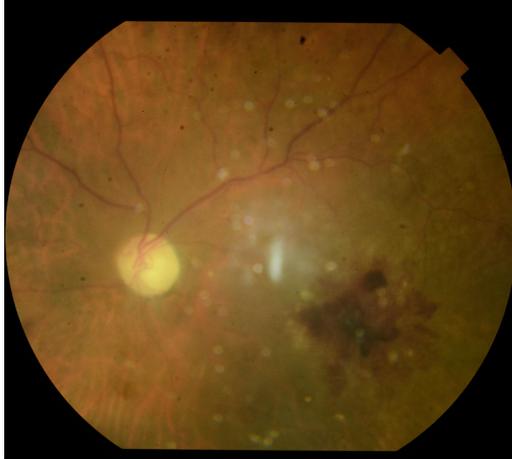
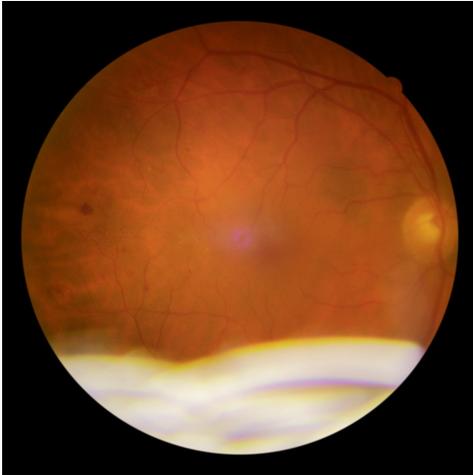
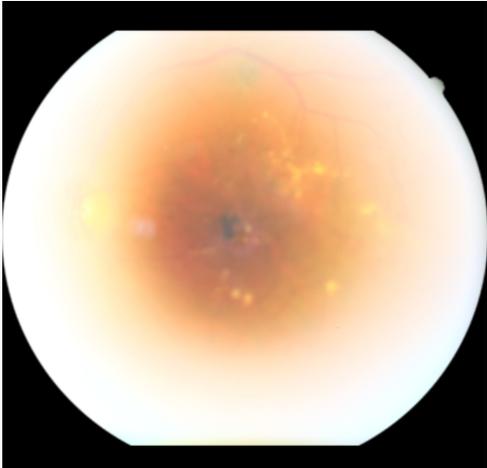
1. Wilkinson CP, Ferris FL, III, Klein RE, et al. Proposed international clinical diabetic retinopathy and diabetic macular edema disease severity scales. *Ophthalmology* 2003;110:1677-1682.
2. Fundus photographic risk factors for progression of diabetic retinopathy. ETDRS report number 12. Early Treatment Diabetic Retinopathy Study Research Group. *Ophthalmology* 1991;98:823-833.

#### 4.12. Retinal color image quality guidance

Examples of properly aligned, focused, and exposed photographs from the left and right eye:



Examples of insufficient quality retinal color images:

 <p>Eyelashes visible</p>	 <p>Camera lens needs cleaning. You can recognize that the mark is not in the eye because different pictures have the spots in the same location.</p>
 <p>Patient's eye not centered</p>	 <p>Flash setting too low</p>
 <p>Shine at edges.</p>	 <p>The camera is too close to eye</p>

## 5. INSTALLATION



**Warning:** Installation is performed by trained EyeCheckup service providers. WHERE there is no EyeCheckup service provider, URAL Telekom recommends that installation and system changes be performed by individuals familiar with the IT systems on which the EyeCheckup Client is running.

### 5.1. System Requirements

To use the EyeCheckup device you will need the following:

1. A computer running a Microsoft Windows Operating System (Windows 10 or newer)
2. A working internet connection

Specific computer hardware requirements are below.

**5.2. Reference Requirements**

<b>Computer requirements</b>	
Hardware	Intel architecture
Minimum processor	1 GHz
Minimum internal memory	4 Gigabytes
Minimum disk space	500 Gigabytes
Operating system	Microsoft Windows 10 or newer
<b>Optimized Camera Systems</b>	
Manufacturer and Model	Ophthalmic fundus cameras Optimized with Canon CR-2 AF, Topcon TRC-NW400, and Optomed Aurora
<b>Input image specifications</b>	
Image file format	JPEG, TIFF, PNG, BMP, DICOM
Maximal image compression	Fundus Camera Manufacturer's default or less compression
Imaging protocol	<ul style="list-style-type: none"> <li>• 2 images per eye: 1 optic disc centered image, 1 fovea centered image of the human retina</li> <li>• at least 30 degrees color images</li> </ul>
Image format	At least 640x640 pixels per image
<b>Output specifications</b>	
File format	PDF, JPG, or XML file
Output values	<ul style="list-style-type: none"> <li>• Vision-threatening diabetic retinopathy detected: Refer to an eye care professional</li> <li>• More than mild diabetic retinopathy detected: Refer to an eye care professional</li> <li>• Negative: Retest in 12 months</li> <li>• Exam quality insufficient</li> </ul>
<b>Performance</b>	
Processing time	Expected time 30sn with above configuration
Retinopathy detection diagnostic performance	Clinical evaluation on a known clinical dataset surpassed the minimum standard of >80% sensitivity for vtDR on a sufficient quality image set.
Published reference system performance	Ahmet Burak Bilgin et all, 2022
Internal clinical evaluation	Performance testing on 900 people with diabetes from an internal dataset with a reference standard based on grading by retinal experts

### 5.3. Installation

1. Download the EyeCheckup Client installation package based upon information provided by your URAL Telekom representative.
2. After downloading the installation package, use Windows Explorer to browse to the location on the hard disk where the EyeCheckup installation package has been saved.
3. Double-click the installation package.
4. Select the destination directory where the EyeCheckup Client should be installed. (The destination directory must be writable and have sufficient space available.)
5. Follow the installer prompts to install the software.

### 5.4. Registration

A registration code from URAL Telekom is required. Without registering the Client, it cannot be used to obtain results and will not function. To obtain a code, contact EyeCheckup at [info@eye-checkup.com](mailto:info@eye-checkup.com) or contact your URAL Telekom representative.

- After installation, the EyeCheckup Client can be started by double-clicking the "EyeCheckup.exe" file in the installation folder. The client will start up and ask for a product key.

The screenshot shows a registration window with the following elements:

- Title Bar:** Registration [Close]
- Product Key:** A field containing a barcode and the alphanumeric string `*123456789*`.
- Form Fields:**
  - Product key :** [Empty text box]
  - Company :** [Empty text box]
  - Name :** [Empty text box]
  - E-Mail :** [Empty text box]
  - Phone :** [Empty text box]
- Buttons:**
  - Activate for current user** (highlighted with a blue border)
  - Test connection**

- Fill in the product key and the other information, and press "Activate for current user" once finished. Upon successful registration, the following message is shown:

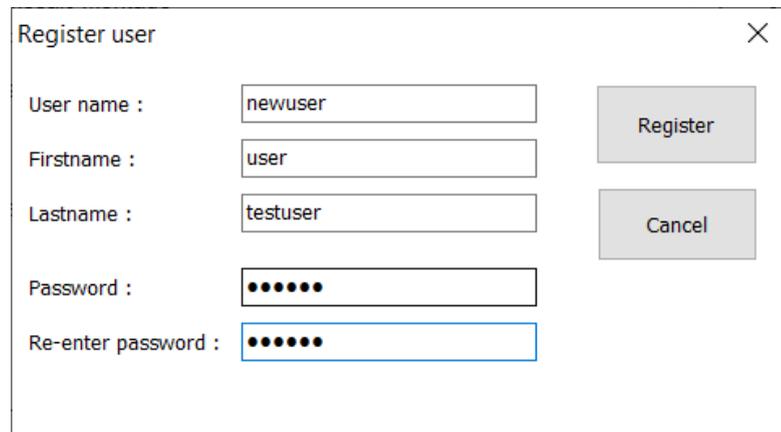
**"Activation successful"**



- Then, press “OK” to start the application.

**(Note:** Please do not change or edit this screen without contacting your authorized service dealer. Doing so could cause your software to stop functioning.)

- Click the “Register” button to create your username and password or add new users.



## 5.5. Software Updates

Updates for this EyeCheckup software product can become available. Such updates are essential to keep the software product operating safely, effectively, and reliably.

## 5.6. Camera Settings

- Please see associated camera manufacturer instructions for camera configurations and settings.
- Inspect the camera lens and clean if applicable in accordance with the appropriate camera manual.

- Configure the study site so that minimal light is present. The best practices for maintaining darkness in a study room are below:
  - Turn off lights
  - Close blinds or curtains or block light from windows.

## 6. INTRODUCTION

### 6.1. Login

After registration, to start using the “EyeCheckup - Artificial Intelligence Supported Retinal Disease Screening and Diagnostic Software Device” simply double click the EyeCheckup icon on your desktop.



The login screen will appear and ask you for your login credentials. The default username and password are both 'master'. For patient privacy and added security, it is recommended that you create your own Username and Password.

Once you have entered your Username and Password simply click login.

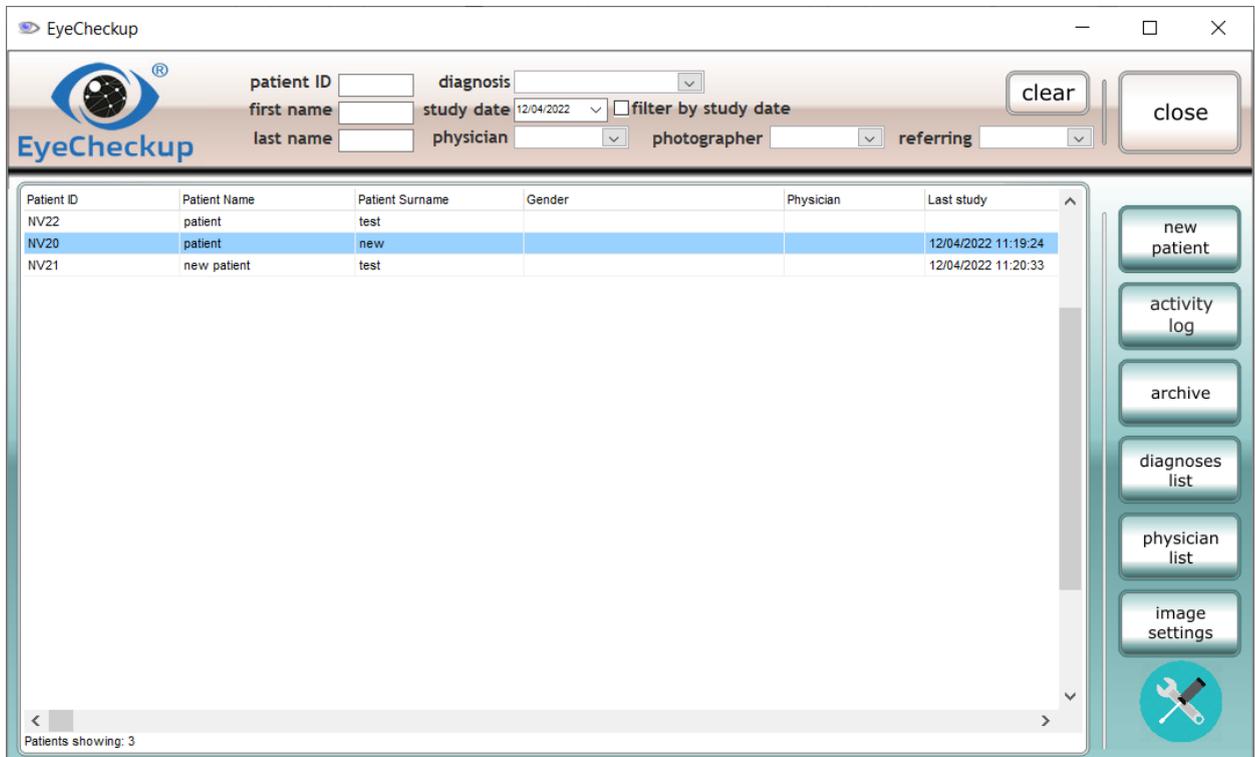
A screenshot of the EyeCheckup login interface. At the top left is the EyeCheckup logo, which consists of a stylized eye with a globe inside. To the right of the logo is the text "EyeCheckup" with a registered trademark symbol. Below the logo and text is a horizontal line. Underneath the line, it says "Licensed to uraltelekom". In the center, the word "Login" is displayed in a bold font. Below "Login" are two input fields: "User name" and "Password". At the bottom of the form are two buttons: "login" and "exit". At the top center of the form, there is a copyright notice: "CopyRight 2020-2022 (C) URAL Telekom. www.eye-checkup.com".

### 6.2. Home Screen

Home Screen is the screen that lists all patients' records. EyeCheckups' the main screen is divided into three major areas:

1. The Header section allows you to easily retrieve a specific patient using eight sortable identifying filters
2. The main body lists the patients that meet your search criteria or all records if no search criteria are entered

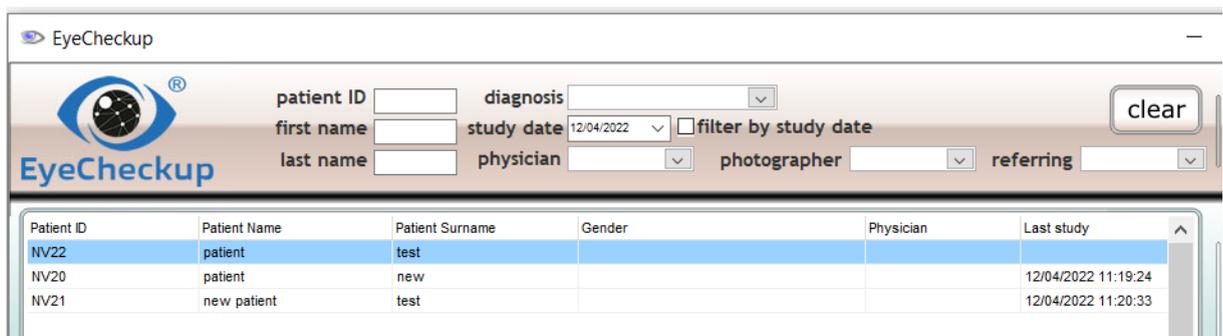
- Along the right side, from top to bottom, are buttons indicating a New Patient, activity log, Archive, Diagnosis List, Physician List (including Ophthalmic photographers), and Image Settings.



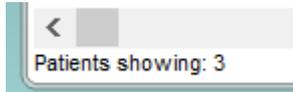
To find out more about the features of a button, field or box move the mouse on it and wait for a



Click on any field header to sort in ascending/descending order. Field headers are located above the patient list (Patient ID, Patient Name, Patient Surname, Gender, Physician, Last Study, Last Photographer or Referring Physician). You may also click and drag a field header to rearrange the order.

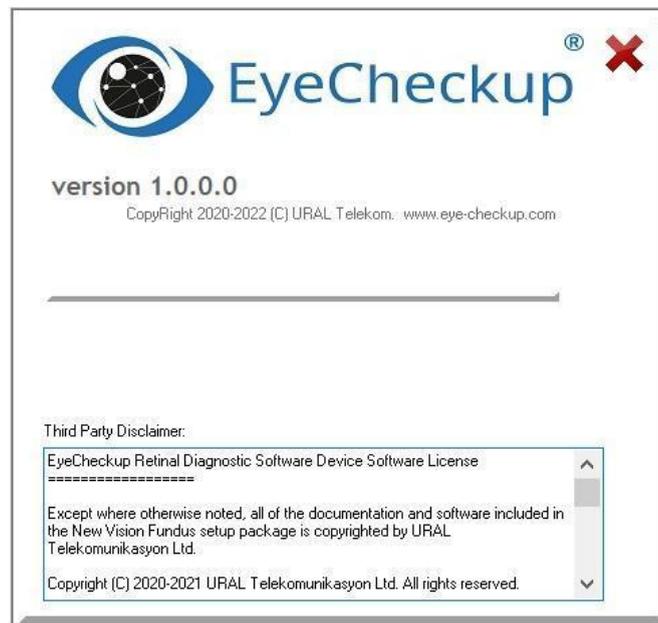


The total number of patients displayed is shown in the bottom left corner of the home screen.



To close the EyeCheckup Software Device, simply click the Close Button at the top right side of this home screen.

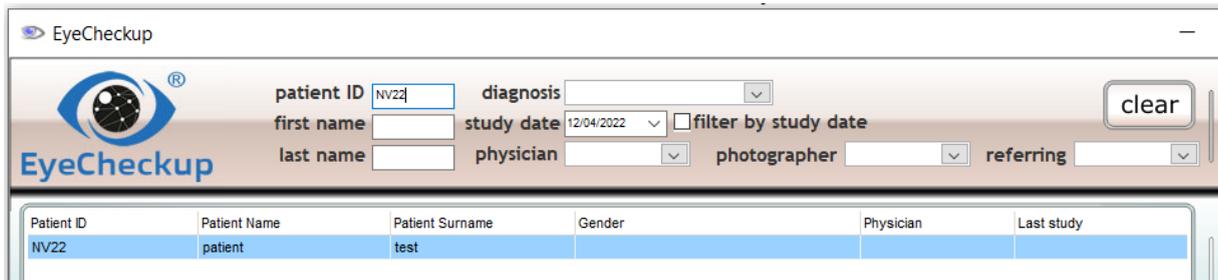
Click on the “EyeCheckup” logo along the left side of the search area for complete version details.



### 6.3. Search

The entire patient list is available on the home screen. To find a patient, type the data in the relevant boxes such as **Patient ID, Patient First or Last Name, Study Date, Diagnosis, and Physician**. The patient will appear just after the data entry.

You may also search according to several criteria. For instance, to find the patient named Donna Carruthers with Patient ID NV70, you can either type 70 in Patient ID or type Patient in Patient First Name or Test in Patient Last Name. The patient will be displayed in the patient list area. You are not obliged to type the entire data of the search criteria; a part of the data entry will be enough to find the patient as shown below.



Patient ID	Patient Name	Patient Surname	Gender	Physician	Last study
NV22	patient	test			

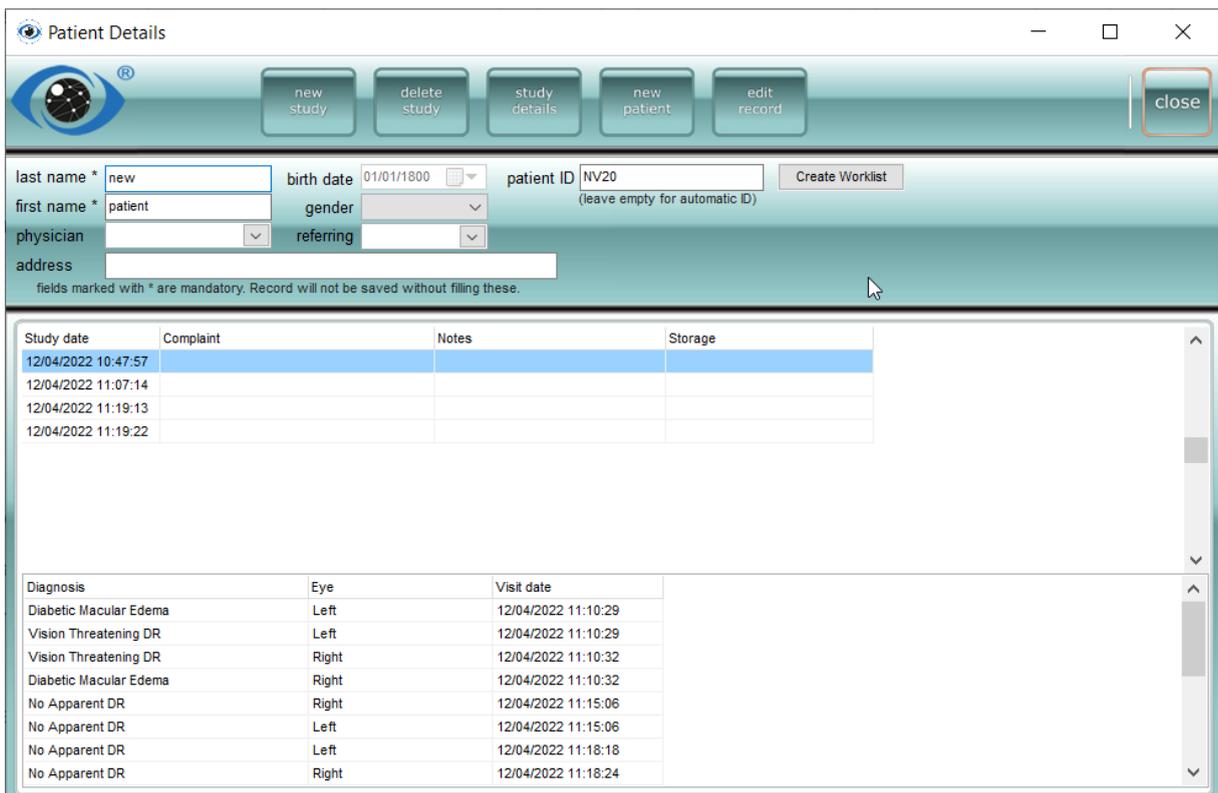
To clear the search or reach the entire patient list, just click the Clear button.

To sort the search results or the entire patient list, click the header of the patient list.

For instance, to sort the patient list according to the Patient ID, click the Patient ID which is above the patient list.

To search the patients on a specific date, type the study date on the **Study Date** box and click the **filter by study date**.

To open the patient details, double-click the patient. More on the Patient Details page in Chapter 7.



Study date	Complaint	Notes	Storage
12/04/2022 10:47:57			
12/04/2022 11:07:14			
12/04/2022 11:19:13			
12/04/2022 11:19:22			

Diagnosis	Eye	Visit date
Diabetic Macular Edema	Left	12/04/2022 11:10:29
Vision Threatening DR	Left	12/04/2022 11:10:29
Vision Threatening DR	Right	12/04/2022 11:10:32
Diabetic Macular Edema	Right	12/04/2022 11:10:32
No Apparent DR	Right	12/04/2022 11:15:06
No Apparent DR	Left	12/04/2022 11:15:06
No Apparent DR	Left	12/04/2022 11:18:18
No Apparent DR	Right	12/04/2022 11:18:24

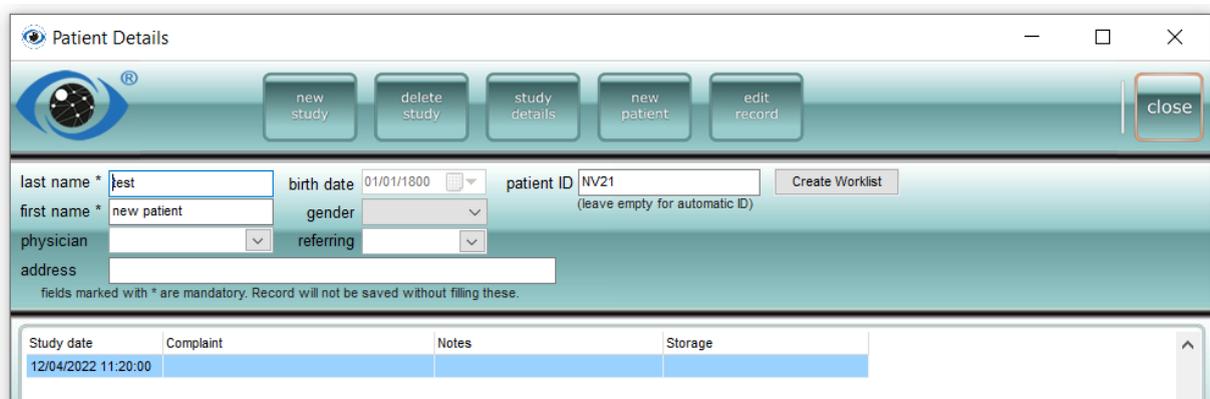
**7. PATIENT DETAILS**

**7.1. Creating a New Patient Record**



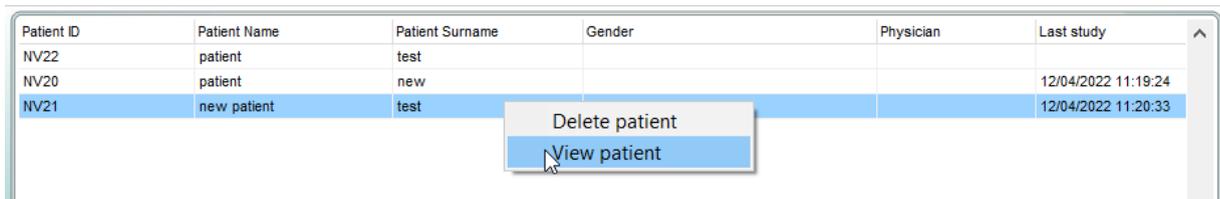
To create a patient, click the button **New Patient**. The patient ID number is generated automatically; however, you can enter any number representing the patient record or account number. Simply leave the Patient ID box empty for automatic numbering by EyeCheckup, except when “Patient ID Mandatory” is selected in Image Settings, which is the default setting.

The only other mandatory fields are **First Name** and **Last Name**. You may enter other available information now or edit the record later.



**7.2. Working with Existing Patients**

There are two ways to open an existing patient record. You can simply highlight, and double-click the patient record you want to open or right-click the mouse and select ‘View patient’



For existing patients, individual studies and diagnoses are listed in the lower part of the patient details window. To reach the study details and images, double-click the study or select the



**Study Details** button.

Study date	Complaint	Notes	Storage
12/04/2022 10:47:57		Dilate	
12/04/2022 11:07:14			
12/04/2022 11:19:13			
12/04/2022 11:19:22			

Diagnosis	Eye	Visit date
Diabetic Macular Edema	Left	12/04/2022 11:10:29
Vision Threatening DR	Left	12/04/2022 11:10:29
Vision Threatening DR	Right	12/04/2022 11:10:32
Diabetic Macular Edema	Right	12/04/2022 11:10:32

### 7.3. Editing Patient Details



Edit the patient details: only by clicking on **Edit Record** . After typing the data, click



**Save Record** to save the changes.

**NOTE:** The **Edit Record** button is changed to **Save Record** during editing.

Ⓜ Patient Details [ - ] [ □ ] [ × ]

last name \*  birth date  patient ID   
(leave empty for automatic ID)

first name \*  gender

physician  referring

address

fields marked with \* are mandatory. Record will not be saved without filling these.

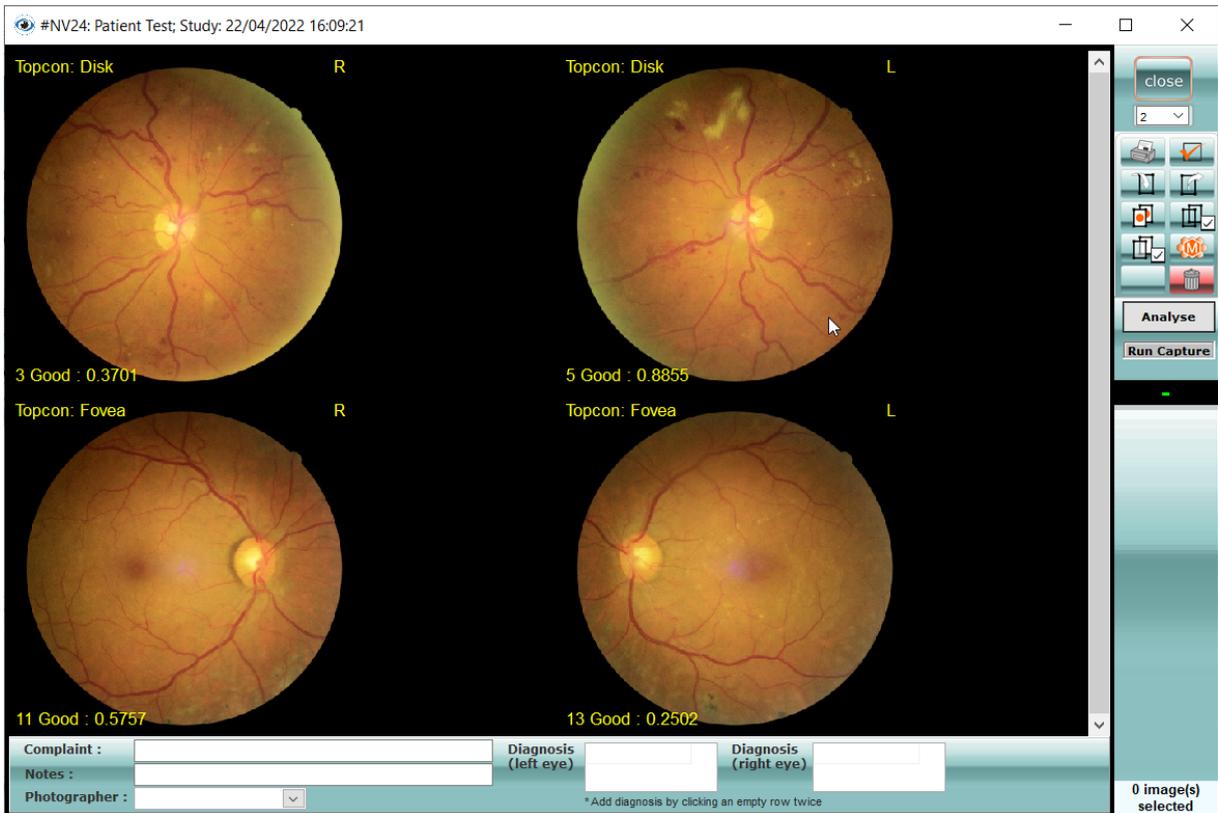
Study date	Complaint	Notes	Storage
19.01.2021 11:59:30			LOCAL

### 7.4. Creating a New Study



After clicking on an existing patient or creating a new patient, click the **New Study** button.

When you click on the New Study button, the window below will appear and the fundus images displayed in the study are the images of the last patient.



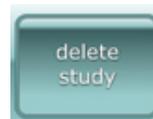
When you add the captured retina images, the boxes will automatically fill in this window. When you drag and drop the selected retina images into the box, they will automatically be placed in the boxes.

**NOTE:** Capturing new and working with existing images will be covered in Chapter 8.

An existing patient record will list any previous studies sorted according to the study date with the oldest study on top. Simply double click on an existing study to open.

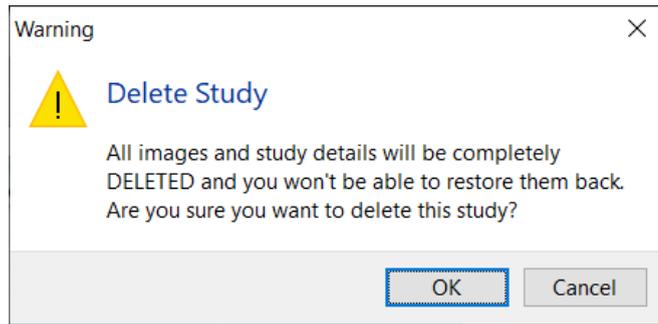
Study date	Complaint	Notes	Storage
10/5/2010 9:55:31 AM	Reduced Vision	Diabetic Retinopathy	LOCAL & C:\Documents and Settings\Administrator\Des
10/6/2010 7:53:10 AM			LOCAL & C:\Documents and Settings\Administrator\Des
1/19/2012 11:12:02 AM			LOCAL & C:\Documents and Settings\Administrator\Des
1/19/2012 11:25:45 AM			LOCAL & C:\Documents and Settings\Administrator\Des
3/14/2012 7:54:44 AM			LOCAL

### 7.5. Deleting the Study



To delete a selected study only, click the **Delete Study** button.

You will receive the following warning:

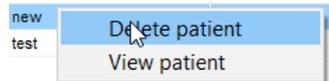


When you click the OK button, the study will be deleted.

**NOTE:** Only one study may be deleted at a time.

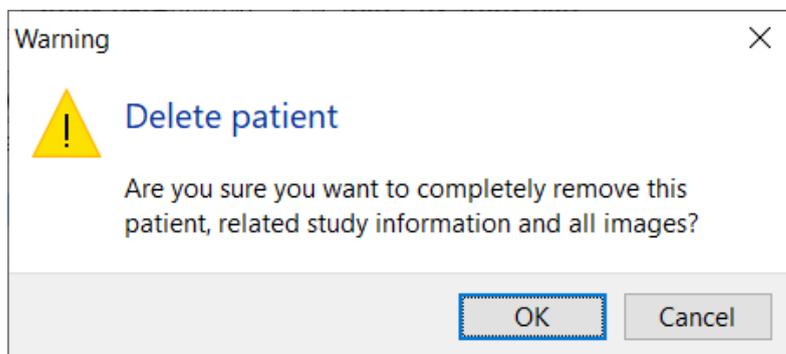
### 7.6. Deleting the Patient Record

To delete a complete patient record, right-click on the patient record you want to delete and



then click **Delete Patient** on the popup window

**NOTICE:** Be aware that all patient details and images will be completely removed from the software and it will not be possible to reach them again. A message “**Are you sure you want to completely delete this patient, related study information, and all images?**” will appear on the screen after clicking on the Delete Patient button. If you select OK, the patient will be deleted. If you click Cancel, no changes are made.



### 7.7. Undelete

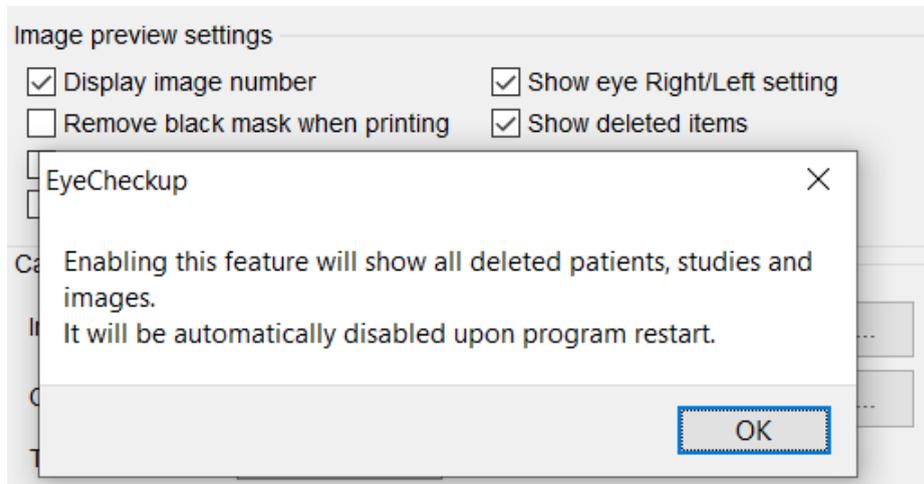
In the event a study or patient record is deleted, it may be recovered for a period of up to 30



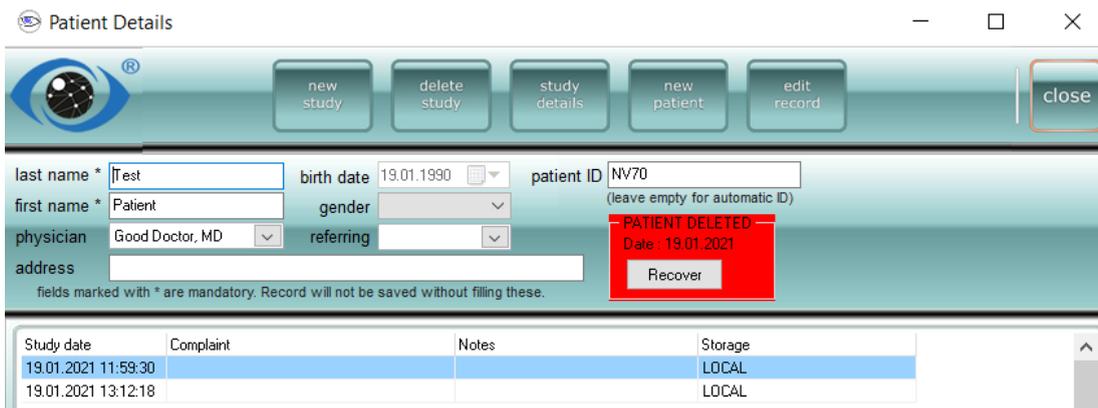
days. From the “Home Screen” go into “Image Settings”. Check the box “Show Deleted Items” and follow on-screen instructions. After recovery of deleted items, close and restart EyeCheckup. Once EyeCheckup is started again, the undelete function turns off.

**NOTE: DO NOT** capture or import when the undelete function is active.

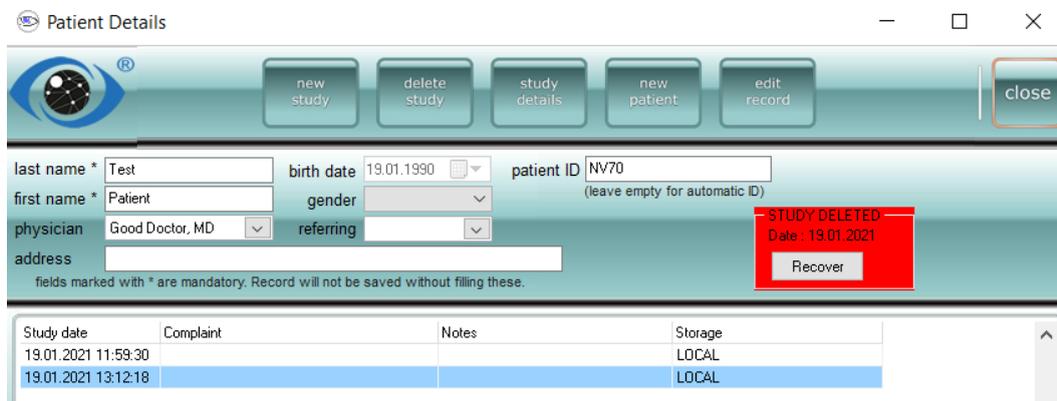
**7.7.1. Undelete Selection in Image Settings Box**



**7.7.2. Patient Record Recovery**



**7.7.3. Study Record Recovery**



**8. STUDY DETAILS**

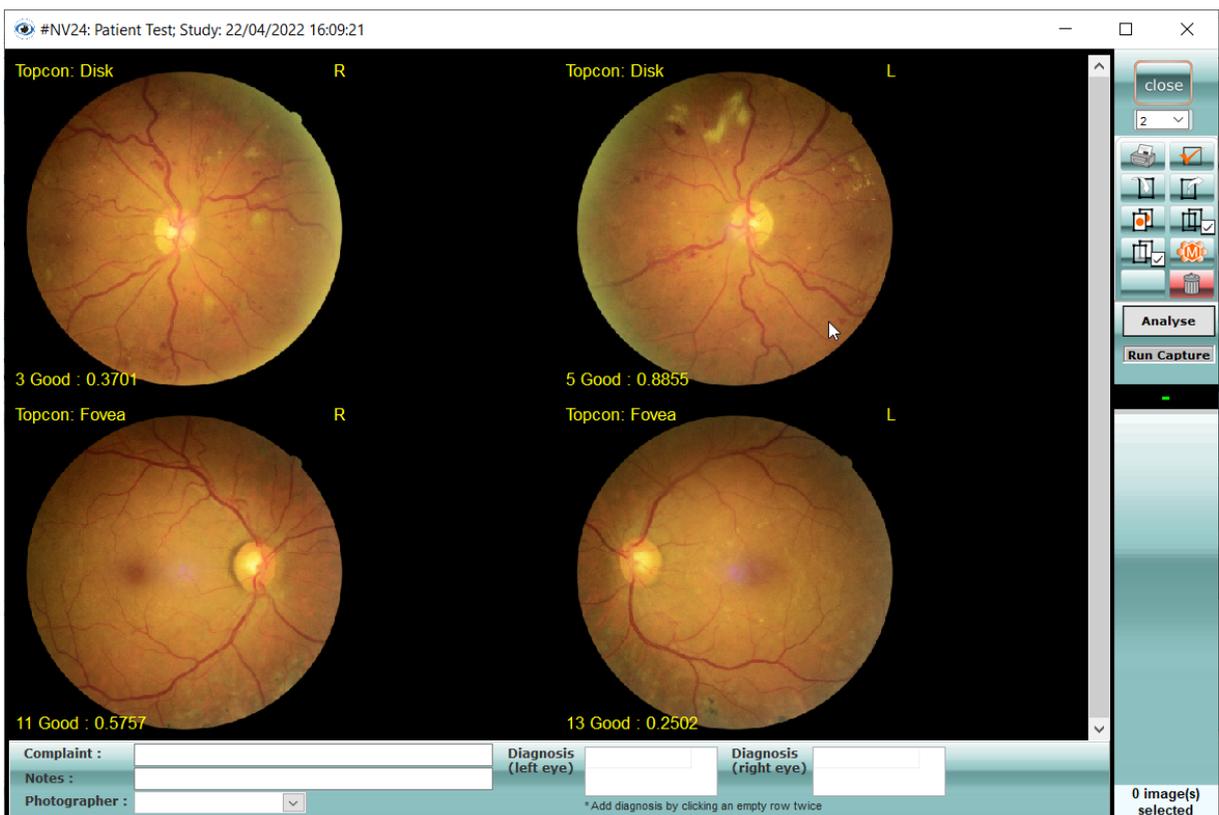
**8.1. Capture**

Before starting image transfer, click the **New Patient** button and follow the procedure specified in section 7.1. to create a new patient record. If you have a patient already in EyeCheckup, do not create a new record, but just open this patient’s record (refer to section 7.2.). If you have a separate Patient ID numbering system, enter a corresponding Patient ID, otherwise, leave the Patient ID field empty to assign an automatic Patient ID.

Click the **New Study** button and follow the procedure specified in section 7.7 to create a new study.

After a new study is created and a blank Study Details window is opened, begin image transfer to the C:\NVTEMP folder (or other folder specified in the **Image Settings** window) using the remote capture, import, or drag and drop method.

You need to capture 2 images for each eye: Optic Disk Centered and Fovea Centered. Captured (imported) images will automatically appear in the corresponding boxes as described below:



When you add the captured retina images, the boxes will automatically fill in this window. When you drag and drop the selected retina images into the box, they will automatically be placed in the boxes.

**NOTE:** For automatic device capture, refer to the specific setup and operating instructions provided with your capture device. EyeCheckup accepts jpeg, png, gif, and BMP image formats.

## 8.2. Images in the Import folder

All valid images stored in the import folder (C:\NVTEMP) will be automatically imported into a currently opened study.

**NOTE:** In case no study has opened the images that were captured and stored in the import folder, they will stay in the import folder until a study is opened. In this case, EyeCheckup will offer to import these images into the current study. If you picked the wrong study just click the No button, close the study, and open the correct study to import these images.

**NOTE:** When EyeCheckup restarts, all files residing in the C:\NVTEMP folder will be moved to the C:\NVTEMP\\_NV\_IMPORTED folder for backup purposes. Images that were captured while EyeCheckup was not running will be removed. Please check the \_NV\_IMPORTED for such missing images.

### 8.2.1. Submission Criteria

To obtain an EyeCheckup result for a set of images from a patient, the following prerequisites must be met:

1. EyeCheckup Client is operational
2. The EyeCheckup Service is available
3. You have an active EyeCheckup account with URAL Telekom
4. There must be a disc centered and a fovea centered image for each eye, for a total of four images per patient.
5. All images must be obtained from the same patient on the same day with the same camera
6. The image file format must be JPEG, BMP, TIFF, DICOM (containing JPEG), or PNG

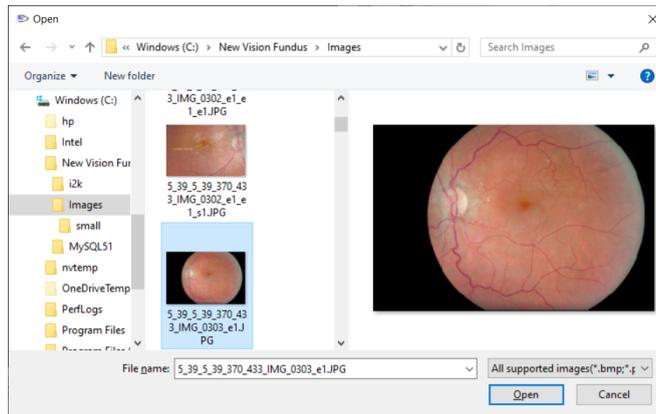
The EyeCheckup Client must be connected to URAL Telekom servers before submitting any exams.

### 8.2.2. Automatic Importing Images for Analysis

Using the left mouse button, select 4 images from the file and import them into EyeCheckup. The selected retina images will be placed in boxes automatically.

### 8.2.3. Manually Importing Images for Analysis

To transfer images from other media (hard drive, CD/DVD, or USB) into the study, click the **Import Image**  button (see below screenshot). Navigate to the location of the images you wish to import.

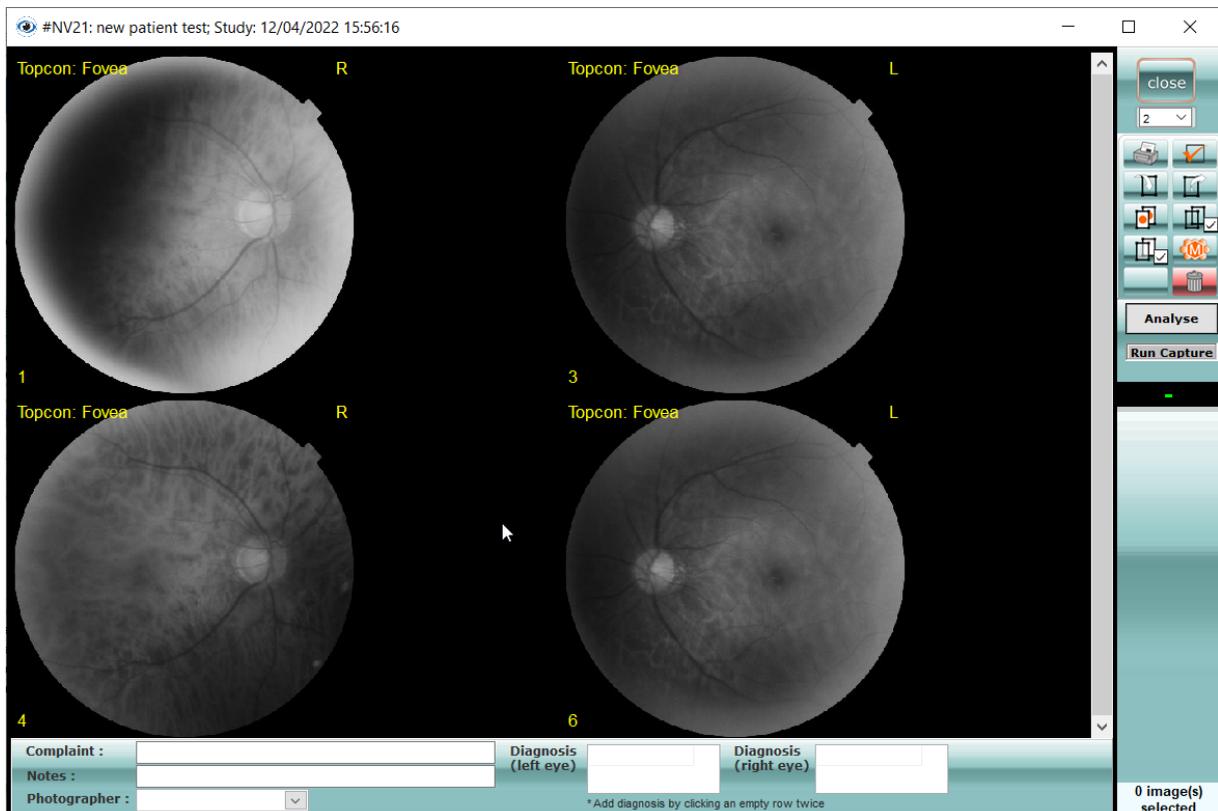


Select the image(s) from the window that opens and click the open button. The image(s) will be saved in the study.

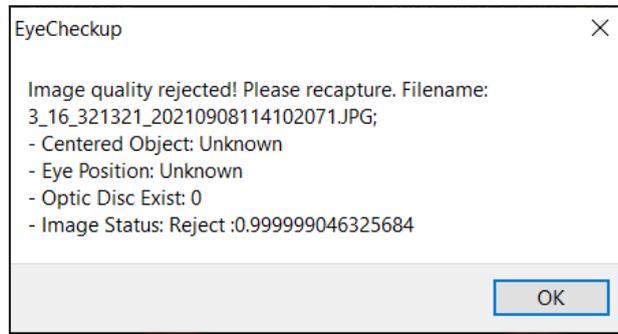
**NOTE:** To import several images to the study, select images in Windows Explorer or My Documents and drag them on the minimized software.

**WARNING:** Invalid Patient Images are automatically rejected by the quality algorithm. You need to re-capture the rejected images with better quality.

Rejected fundus images are also added to the patient study, but are displayed on the screen below.



The reasons for rejection are below:



### 8.3. Analysis

EyeCheckup is indicated for use by healthcare providers to automatically detect more than mild diabetic retinopathy and vision-threatening diabetic retinopathy in eyes of adults diagnosed with diabetes who have not been previously diagnosed with diabetic retinopathy.

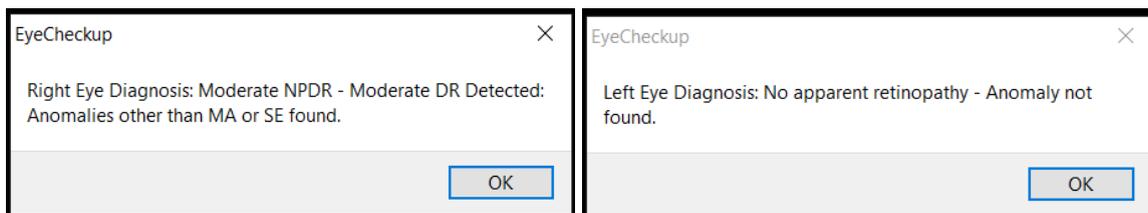
#### 8.3.1. Sending Analysis Request

Select patient images (as disc L, disc R, fovea R, fovea L if images are taken from both eyes of the patient) and Click the **"analyse"** button to analyze the uploaded retina images.

#### 8.3.2. Getting Analysis Results

As the result of the processing and analysis of the retina images by the EyeCheckup server, the presence of the disease can be detected quickly and with high precision without requiring specialist physician intervention. Retina images will be processed by the doctor without being examined, visualizing the presence and symptoms of the disease and presenting it to the doctor for further diagnosis.

After analyzing the images, the analysis result will be displayed as a pop-up screen.

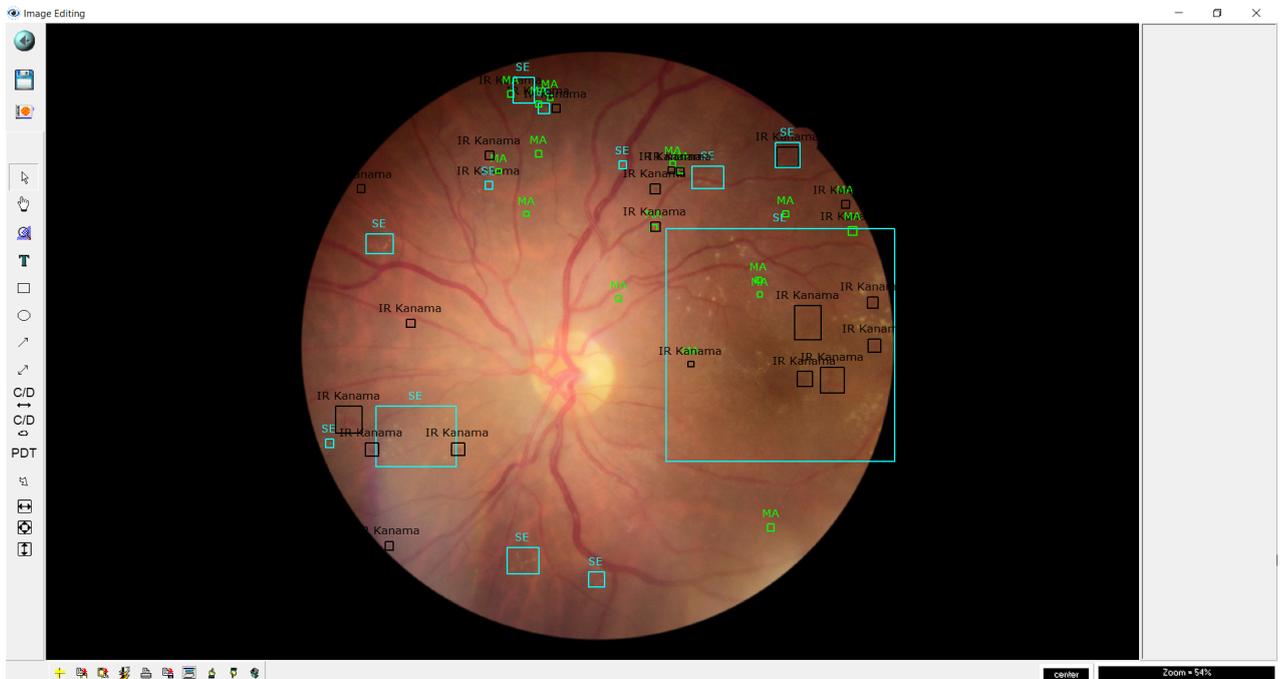


**Note:** Moderate DR was detected in the Right eye, and the left eye is healthy.

Diagnostic results are displayed at the bottom of the study details window.



Double-click the fundus image to see the DR symptoms found. On the window that opens, click the "edit image in a separate window"  button. Symptoms are marked on the window below.



After the analysis has been completed on the EyeCheckup server, the Analysis Results button will be displayed. Click the Analysis Results button to get the analysis results. An analysis report will be displayed. See the sample report below.

The report itself contains the patient name, the performing physician, the date of analysis, laterality, and the screening result.



**EyeCheckup Fundus Analysis Report**

**Performing Physician:** Web Demo Physician  
**Patient Name:** Patient Test001  
**Protocol No:** 1988

**Study Date:** 2023/08/07  
**Patient Age:** 35

	Right Eye	Left Eye
	 <p>Image Quality Score: % 100, Optic disc quality score: % 99</p>	 <p>Image Quality Score: % 90, Optic disc quality score: % 65</p>
	 <p>Image Quality Score: % 100, Macula quality score: % 99</p>	 <p>Image Quality Score: % 100, Macula quality score: % 100</p>
<b>DR</b>	<b>Vision Threatening DR detected. Hard Exudates, Intraretinal Hemorrhage, Microaneurysms found. CSDME suspected.</b>	<b>Vision Threatening DR detected. Hard Exudates, Intraretinal Hemorrhage, Microaneurysms found. CSDME suspected.</b>

**ABBREVIATIONS:** **DR:** Diabetic retinopathy, **ARMD:** Age-related macular degeneration, **RVO:** Retinal vein occlusion, **Retinal Anomalies (GD):** General evaluation of retinal diseases, **CSDME:** Clinically significant macular edema. No risk Average risk High risk

**Figure 1:** Sample analysis report.

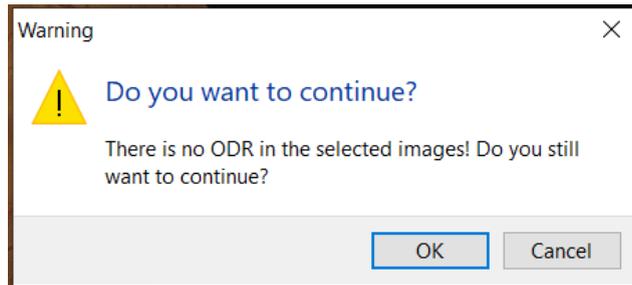
**Warning:** In cases where the EyeCheckup test does not detect the presence of referable disease, the patient should be strongly encouraged to test again at an appropriate point in twelve months after the current eye screening.

**8.4. Getting Analysis Report PDF**

Click the “Export to PDF” button to export the analysis result as a PDF.

**8.5. Analyzing a Patient With a Single Eye**

EyeCheckup will automatically detect whether it is a right eye or a left eye. The images of the eye to be sent for analysis are selected and sent for analysis as in item 8.3.1. It gives a warning on the screen for other eye photos that are not sent for analysis.



It warns that there is no ODR image of the right eye in the above pop-up menu. When OK is selected, it continues the analysis for the left eye.

**8.6. Viewing and Printing Images**

When you click the Study Details button, all images of the study will be displayed as small-format images (which are called “thumbnails”). To view enlarged images, double-click the desired image thumbnail.

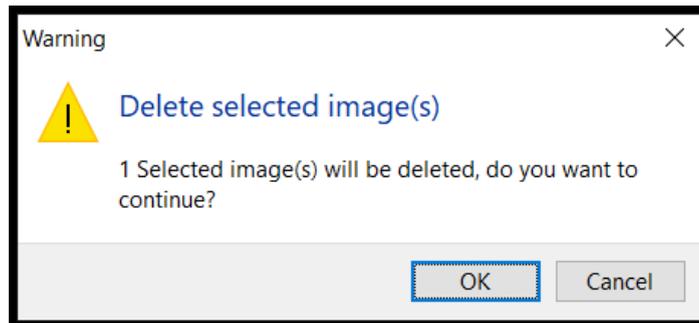
In the thumbnail window, you can print, compare, or delete the images. You can enter the complaint, diagnosis, and notes, import or export images, as well as other functions listed below.



**NOTE:** All operations (except import) require you to select at least one image. Selected images are indicated by a red border.

### 8.7. Deleting Images

Select the image and click the button **Delete**  and confirm the message for deleting the image.

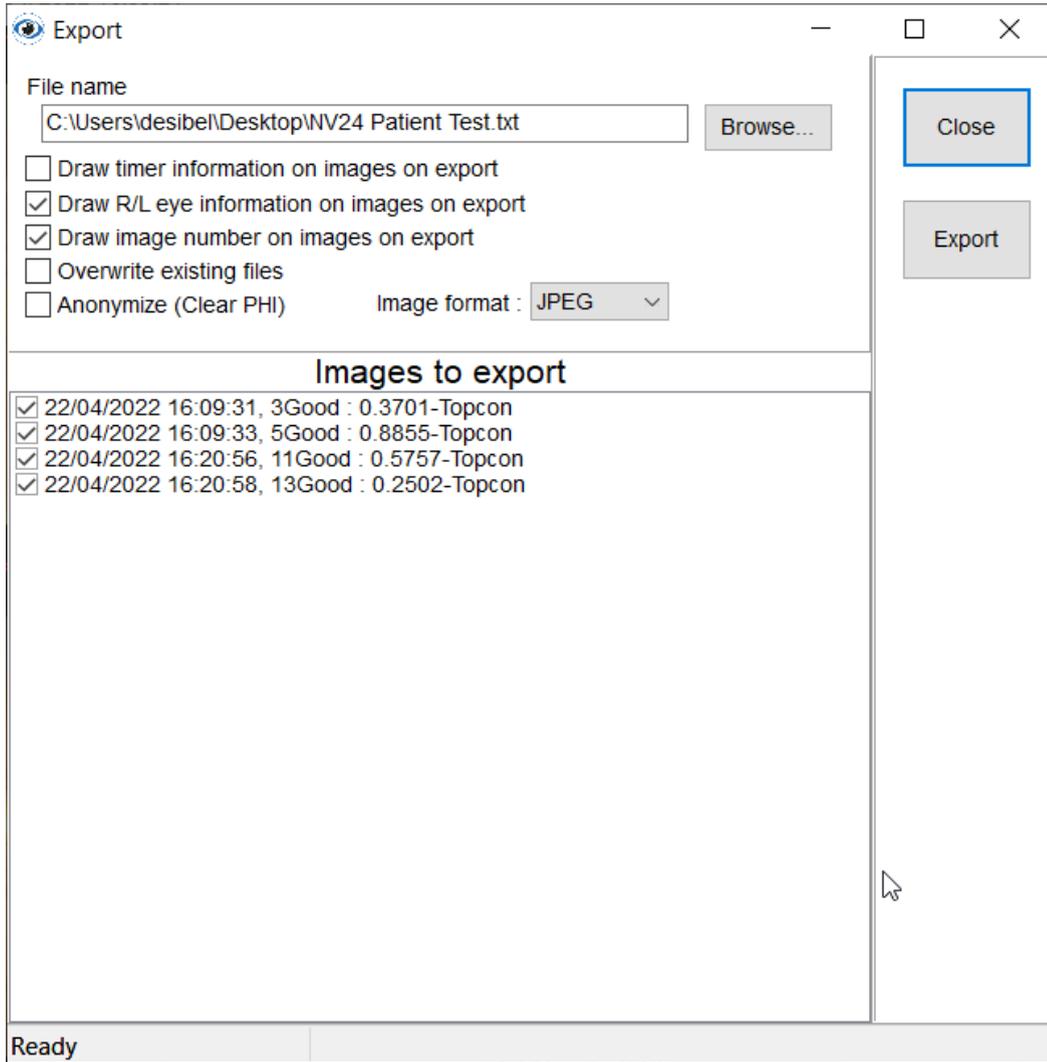


**NOTE:** The selected image has a red frame on the image. Be sure to view all your thumbnails and check the Images Selected counter  in the lower right corner to ensure you have selected only the images you wish to delete.

### 8.8. Exporting Images

Select the images you want to export. Click the Export Image button . The images will be exported in JPEG image format. If you want to edit the F/A timer information on the images, put a tick on the Draw timer information box.

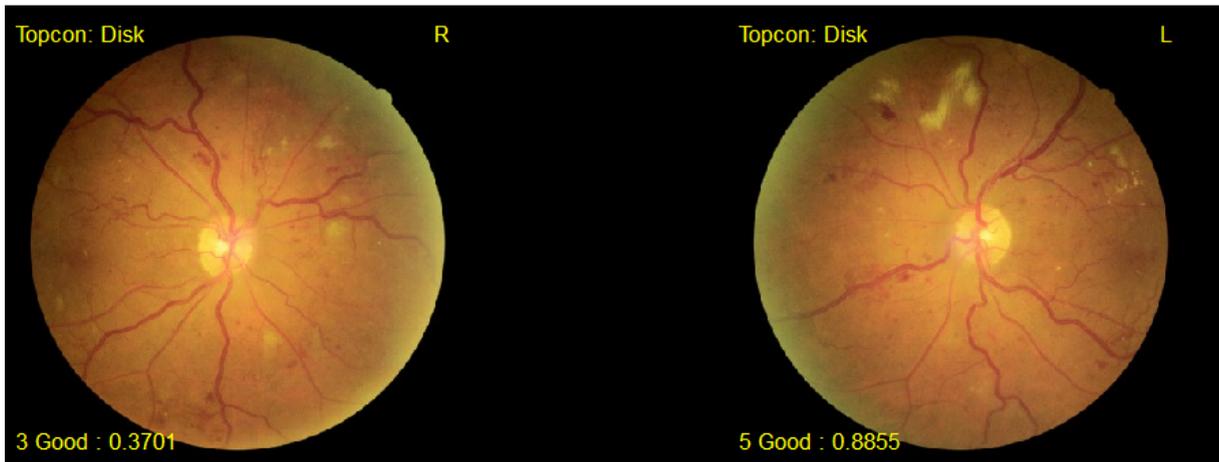
If you want to edit the Right / Left information on the images, put a tick on the Draw R/L information box.



### 8.9. Thumbnail Image View

Before exporting or printing the images, the desired images must be selected.

To select an image, single-click it once. The selected image will be marked by a red border that appears around the picture. Clicking the same image again will de-select it and the red border will disappear.



Each image has information displayed on the thumbnail.

- Top-left text is the “Image type” and can be either Disc (Optic disk centered) or Fovea (Fovea centered). Image type is detected automatically during the image import process.
- The letter in the top-right corner stands for “R - Right eye” and “L - Left eye”.
- The number in the bottom-left corner is for the image order in this study. Each consecutive image will acquire a larger number.
- Good: The quality of the image is the value between 1 and 0. The closer to 1, the higher the image quality.

The total number of selected images is displayed in the bottom-right corner of the Study Details window.

To select or deselect all the images of the study, click the entire selection button. 

### 8.10. Viewing Image as Large Image

Double-click the desired image thumbnail in the study details window to view an image in a single large format. Image process buttons will be enabled in this view while the Image Transfer (print, export, etc.) button will be disabled until you return to the Thumbnail view.

To move to the previous or next image, click the Previous/Next buttons   or press the “Left/Right” keys on your keyboard.

To return to the previous window (thumbnails) click the **Close** button.

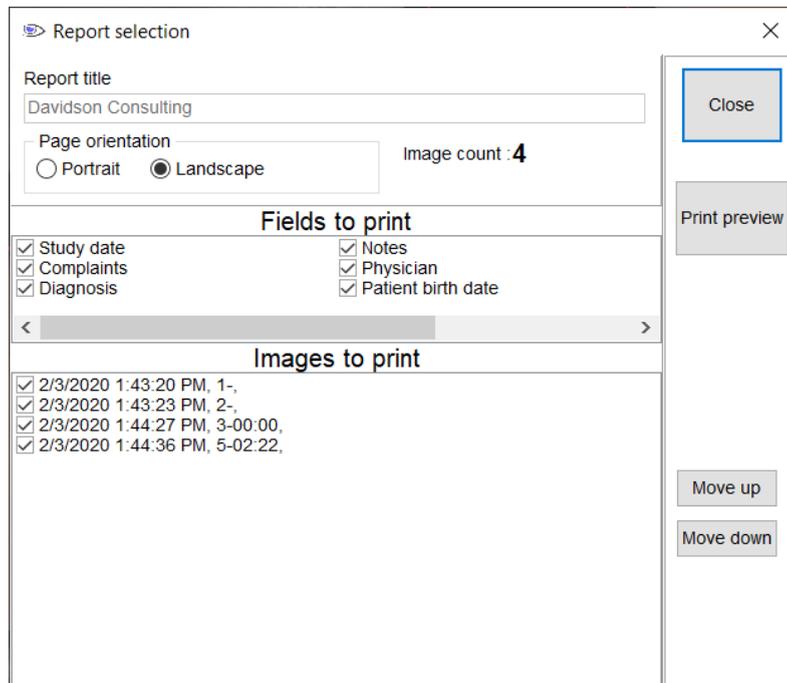
**NOTE:** Clicking the **Close** button again will exit the study details window.

**8.11. Printing Images**

Select the images and click the **Print** icon . The Report Selection window will appear, and selected images will be displayed in this window. Select the Fields to Print, which will print at the bottom of the page. You may deselect the images you do not want to print in this window, as well. Click the **Print Preview** button.

There will be a fixed header on each print that is set in **Image Settings**, which you can access from the main screen of the software. Also, a logo can be entered in the **Image Settings** window. To have an efficient layout for the images and patient information, select the layout as **Portrait** or **Landscape**.

The maximum number of images that can be printed is 16. The information on **Fields to Print** will be automatically transferred and appear on the print layout. You may change the order of the images on the Print Preview layout with the **Move up** and **Move Down** buttons.



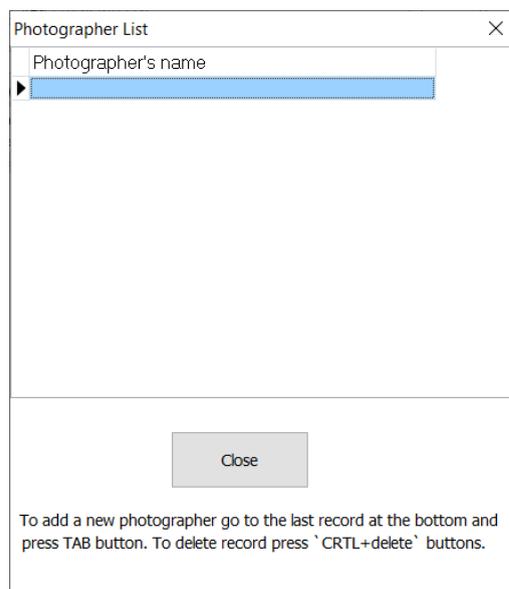
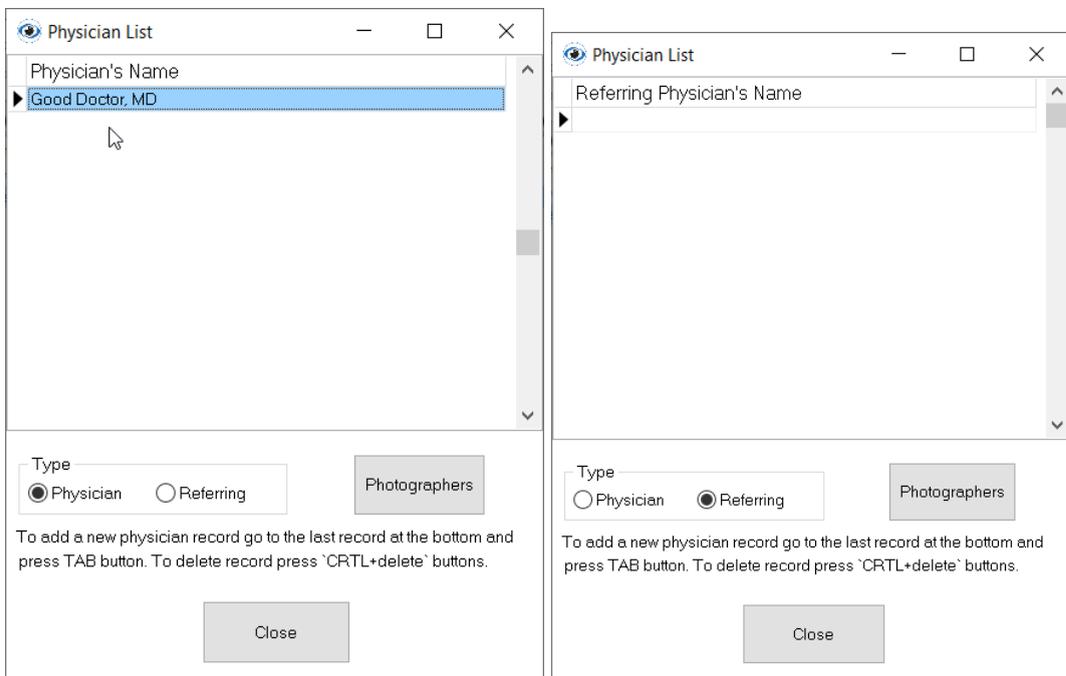
**9. SETTINGS**

**9.1. Physician and Ophthalmic Photographer Maintenance**



Click the **physician list** button on the main screen to add a new doctor. To add a doctor, “physician” must be selected, for referral doctor “Referring” must be selected and for Ophthalmic Photographer, click the “Photographers” button.

To add a new individual to either of these lists, click on the last record and push the down arrow or TAB key on the keyboard. To delete an individual, click on the person you want to delete and press CTRL and DEL keys on the keyboard together. To edit an individual simply click the record and edit accordingly.



**9.2. Image Settings**

Image Settings
✕

**General options**

Report title

Login timeout

Institution logo image

**Calibration**

One pixel maps to  microns

Thumbnail view

 Columns

Print page size

**Image preview settings**

Display image number

Remove black mask when printing

Enable i2k mosaic montage

Preview each captured image

Show eye Right/Left setting

Show deleted items

**Capture settings**

Import folder:

Capture program:

Timer prefix:

Camera type:  Image orientation:

**Post import**

Archive imported image

Patient ID entry is mandatory

Enable Capture 2

Crop dark area using mask

'Capture not running' warning

External Capture Timer support

**Capture 2 settings**

Import folder:

Capture program:

Timer prefix:

Camera type:  Image orientation:

**Post import**

Crop dark area using mask

'Capture not running' warning

**Optomed Aurora settings**

Import folder:

Only visible when LDAP is selected

Only visible when Enable Capture 2 is selected

42 / 61

UG.003 RevNo:02 (15.07.2023)

### 9.2.1. General Options

Enter the print header in the **Report Title** field which will be transferred to the print automatically. You can type the header as 3 rows. You may add your telephone number at the end of the third line to appear on landscape prints. You can also print your logo by selecting the logo image through **Browse**. The logo will appear automatically on the left upper side of the print.

### 9.2.2. Image Preview Settings

**Display image number** and **Show Eye Right/Left** settings will display corresponding information on the image thumbnail in the Study details window. Display Image Number is optional and may be toggled on/off according to your preference. Once images have been selected for right/left, turning this feature off only hides the selections. The right/left information previously selected will appear on image thumbnails when you select this box again. When **the Display image number** is selected, reject and good values appear which are graded according to the quality algorithm.

**Remove black mask when printing** setting will remove the dark area around the optical disk. The resulting image will be enlarged and fit to the paper size. Using this setting, it is recommended to print larger images and reduce ink consumption.

**Show deleted items** are used for the recovery of deleted images. See section 7.7 for details.

**Enable i2k mosaic montage** Select images, click on the Montage icon, resulting montage image is automatically saved at the end of the study

**9.2.3. Capture Settings**

The screenshot shows a 'Capture settings' window with the following fields and values:

- Import folder: c:\nvtemp
- Capture program: C:\Program Files\Notepad++\notepad++.e
- Timer prefix: (empty)
- Camera type: Topcon NW8F
- Image orientation: Normal

**Import folder** to set the directory from where captured images will be automatically transferred to the patient study. Default value is C:\nvtemp.

**Capture program** to set the default program from where the capture device is launched from the patient study.

**Ophthalmic camera Type** uses the dropdown to pick the ophthalmic camera your office uses. Available choices are Topcon 50A, Topcon 50B, Topcon NWA, Topcon 50EX-A, Topcon 50EX-B, Zeiss FF4, Topcon 50EX-C, Canon CR-2 AF, Topcon 50EX/DX-L, Canon EOS R, Topcon NW8F, etc

**Image orientation** to set how the images are displayed when automatically transferred to the patient study. Available choices are Normal, Rotate, by 180 degrees, Flip Vertical, and Flip Horizontal.

**9.2.4. Post import**

The screenshot shows a 'Post import' window with the following checked and unchecked options:

- Archive imported image
- Crop dark area using mask
- Patient ID entry is mandatory
- 'Capture not running' warning
- Enable Capture 2
- External Capture Timer support

**Archive imported image** is a *mandatory field*.

**Crop dark area using mask** setting will automatically crop dark area of every image imported via C:\nvtemp. Cropping mask selection is made with **Image Mask Settings** to match the ophthalmic camera image. Use only with guidance from your technical representative.

**Patient ID entry** is a **mandatory field**

**'Capture not running' warning** is a mandatory field.

**Enable Capture 2** is an optional field and should be checked if you are using both ports on your ophthalmic camera

**External Capture Timer support** is a **mandatory field** that will ensure each photo is properly timestamped

**9.2.5. Capture 2 Settings**

**Import folder** to set the directory from where captured images will be automatically transferred to the patient study. Default value is C:\nvtemp2.

**Capture program** to set the default program from where the capture device is launched from the patient study.

**Ophthalmic camera Type** uses the dropdown to pick the ophthalmic camera your office uses Available choices are Topcon 50A, Topcon 50B, Topcon NWA, Topcon 50EX-A, Topcon 50EX-B, Zeiss FF4, Topcon 50EX-C, Canon CR-2 AF, Topcon 50EX/DX-L, Canon EOS R and Megavision 50DX/50EX

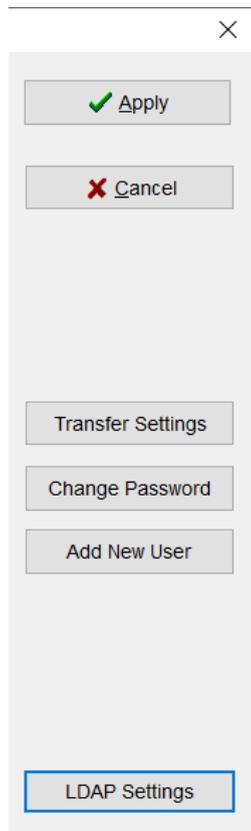
**Image orientation** to set how the images are displayed when automatically transferred to the patient study. Available choices are Normal, Rotate, by 180 degrees, Flip Vertical, and Flip Horizontal.

**9.2.6. Post Import '2'**

**Crop dark area using mask** setting will automatically crop dark area of every image imported via C:\nvtemp2. Cropping mask selection is made with **Image Mask Settings** to match the ophthalmic camera image. Use only with guidance from your technical representative.

**'Capture not running' warning** is a mandatory field.

**9.3. Right Side Buttons**



**Apply** will save all changes

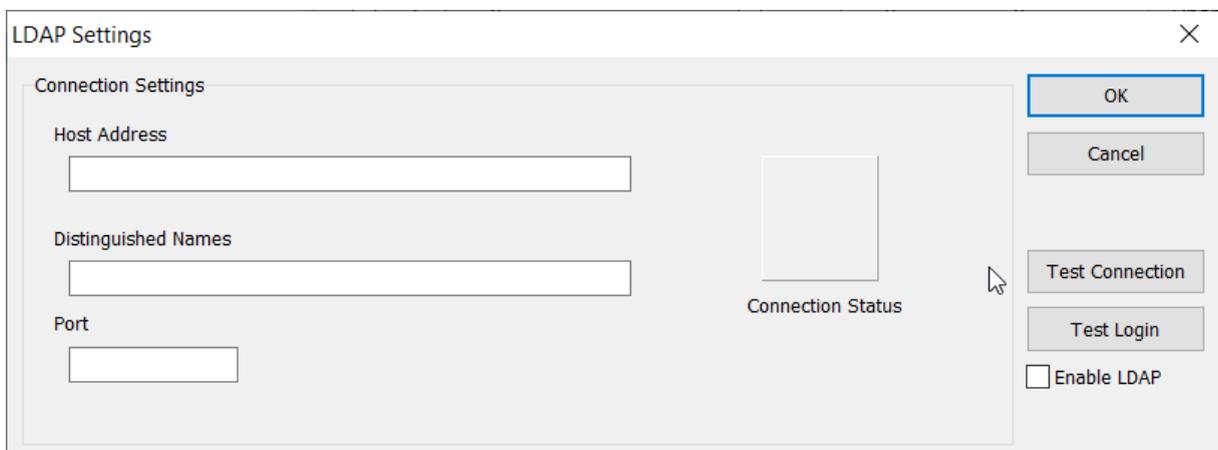
**Cancel** will ignore any changes

**Transfer Settings** see section 10 *Automatic Transfer for EHR/EMR* for details.

**Change Password** Will allow you to change the password of the current user

**Add New User** Will allow you to add new users

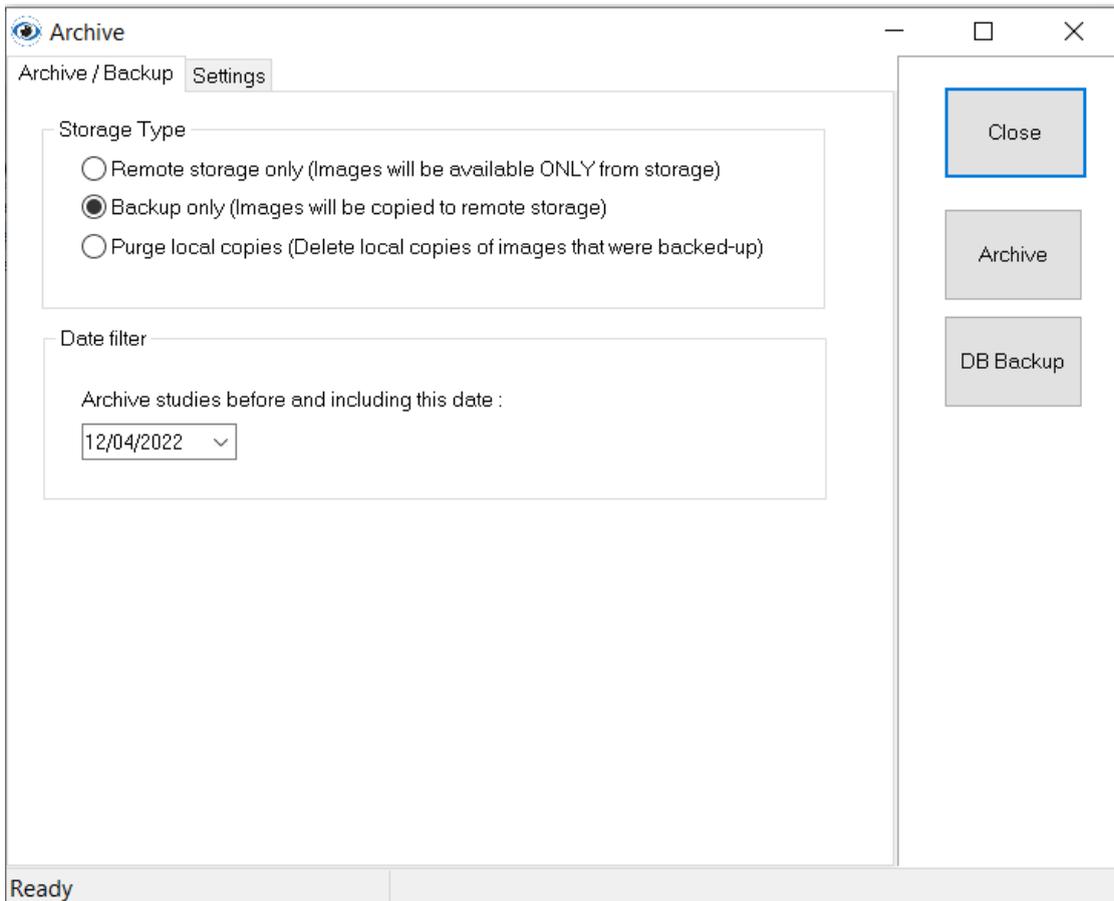
**LDAP Settings** Controls the connection parameters for your LDAP server. (Contact your systems administrator for correct settings.)



**9.4. Archive and Backup**

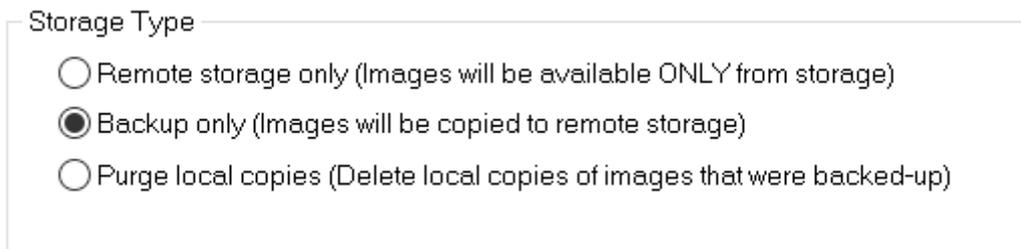


Click the **Archive** button on the main menu.



**9.4.1. Storage Type**

There are three radio buttons located at the top of the Archive dialog box describing storage type.



**9.4.1.1. Remote Storage Only**

This choice allows you to remove the images from your hard drive. The patient listings remain on your home screen. To retrieve images for these patients, you *must* have access

to the media created by the archiving routine. You will set the path or browse to the directory where your archive file is located. When accessing the archived patient records, EyeCheckup will show you which archive file number to use.

Study date	Complaint	Diagnosis	Notes	Storage
10/17/2009 10:24:03 AM	Central Viewing Loss	AMD	Treatme	LOCAL & C:\Documents and Settings\Administrator\Desktop\Archive\WV Archive 1016

Remote Storage Only allows images to be transferred to the CD/DVD, archiving media, or network environment.

**NOTE:** We do NOT recommend using a USB flash, jump or thumb drive for permanent storage of your images as these devices are not stable over the long term.

#### 9.4.1.2. Backup Only

This option allows you to save the images to another device: CD/DVD, USB, archiving media, or network environment. The images are not removed from the hard drive.

**NOTE:** This is the default selection and should always be used if you wish to maintain the original patient images available from the computer without having to load other media.

#### 9.4.1.3. Purge Local Copies

This option should be used with caution as it will permanently remove all images from your local machine as of the date chosen in the “Date filter”! Make sure have used the Backup feature and have a reliable backup as of the same date you chose for the Purge! For example, if you chose to purge all data up to and including February 1, 2019, but your last backup was completed on January 1, 2019, you will lose all images taken between January 2<sup>nd</sup> and February 2<sup>nd</sup>

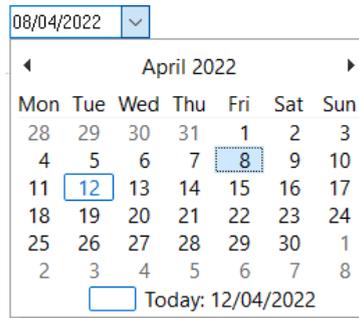
#### 9.4.1.4. Date Filter

Date filter

Archive studies before and including this date :

08/04/2022
▼

A pull-down calendar to select the date archiving/backup operation will begin. Default is today's date.



**9.4.2. Archive Images**

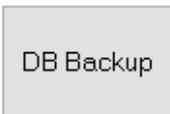
To create an archive of the patient images in your database, click the Archive images



button.

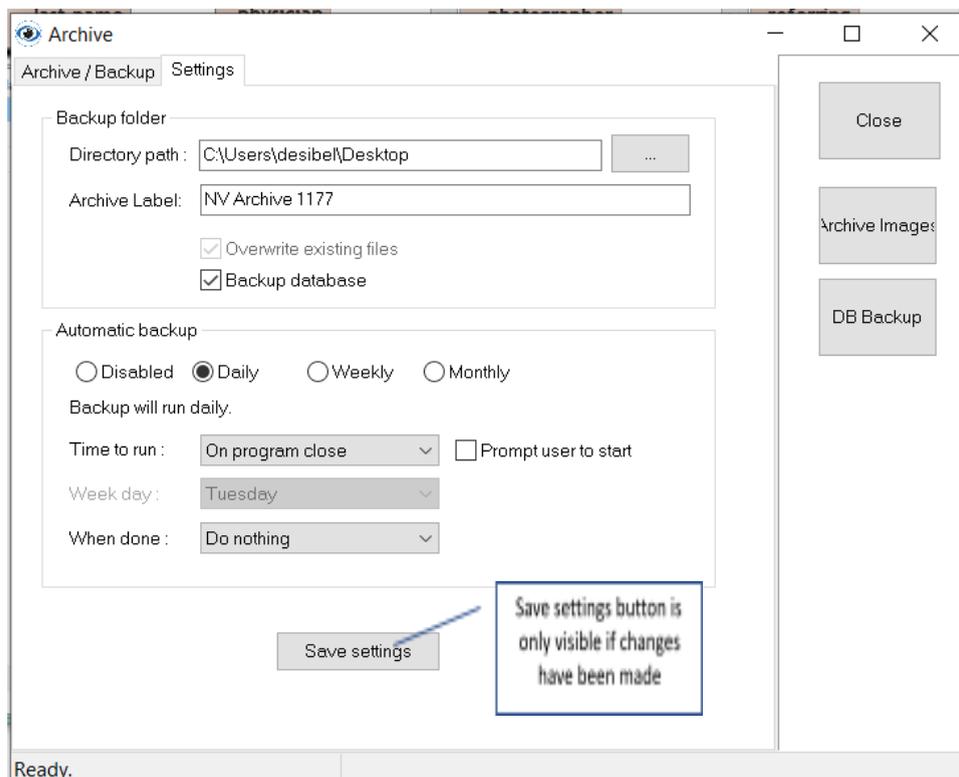
**9.4.3. Backup Database**

To create a backup of the patient information in your database, click the DB Backup



button.

**9.4.4. Archive and Backup Settings**



**9.4.4.1. Backup folder section**

Backup folder

Directory path :

Archive Label:

Overwrite existing files

Backup database

**9.4.4.2. Directory Path**

To archive to a folder on a network or external hard disk, browse or type the path in the Directory Path settings box. The images are archived in the external environment. To archive to the network, right-click the My Computer and connect to a network drive. Select the drive and folder where you want to archive. Every time you turn on your computer, the computer will connect to this drive. Select this archive folder from the Directory Path in the Device Settings option. To archive to an external location, create a folder named Archive into the drive. Select Directory Path to this folder.

**9.4.4.3. Archive Label**

After archive operation, there will be an archive label number given by the software. This number is automatically assigned and shown in the Archive Label box. This number cannot be changed.

Archive Label:

**9.4.4.4. Backup database**

When this box is checked the database will be backed up along with the images.  
(Recommended setting)

Overwrite existing files

Backup database

**9.4.4.5. Automatic backup section**

Automatic backup

Disabled
  Daily
  Weekly
  Monthly

Backup will run daily.

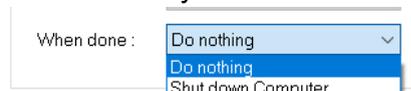
Time to run :   Prompt user to start

Week day :

When done :

This section allows you to decide when and how often you want your backups to run.

- Disabled – Backups will only occur when pressing the “Backup Database” button
- Daily – This option allows you to automatically backup your data every day.
- Weekly – This option allows you to pick a single day of the week to automatically run your backup
- Monthly – This option will automatically run your backup once per month
- Time to run – This option lets you decide if the backup will run when you start the program or when you exit from the program
- Weekday – This option becomes available when the Weekly radio button is chosen
- When done – This option becomes available when you choose the “On program close”



option on the “Time to run” dropdown.

**9.5. Viewing Archived Images**

To view the archived images of a patient, click the study details of the patient. There will be a message displayed asking you the label number where the images of this patient and study were archived (i.e. Z:\Fundus 1016). Insert the media or browse to the network drive and click **OK**. These images will be loaded into the study details as thumbnail images.

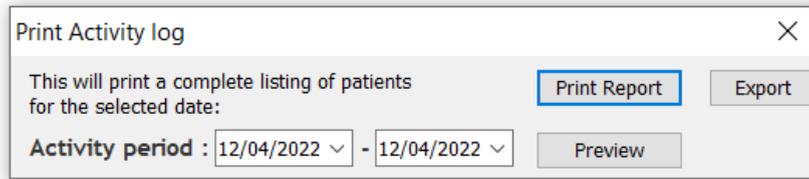
**NOTE:** If you process, edit, etc. the archived image, you must **Save As** this image so that the new image will be saved to the hard drive.

**VERY IMPORTANT:** There is always a risk of data loss due to computer or software crashes. To avoid any data loss, archive your images and backup the database regularly. Archiving and backup is always the responsibility of the customer.

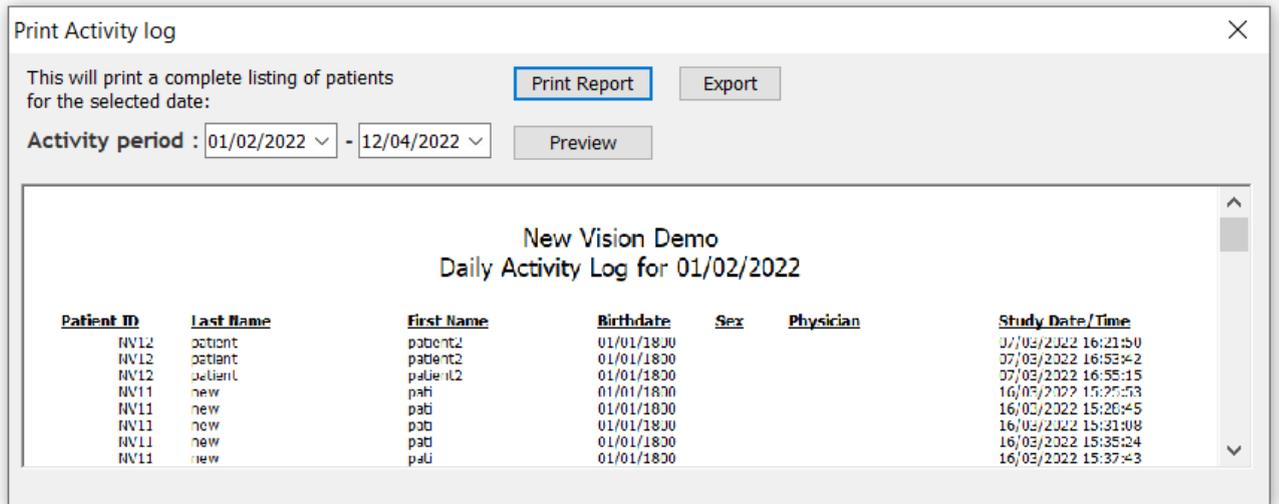
**9.6. Activity Log**



From the home screen, select the Activity Log icon.

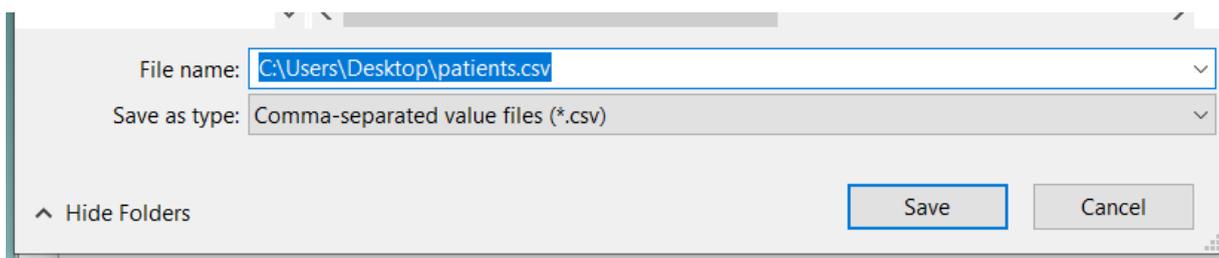


After selecting the date range, clicking the "Preview" button will show the following screen.



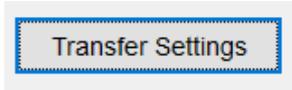
The Activity Log can serve as a daily log for your records. Activity logs can be printed for a given date or range of dates at any time. Use the pull-down calendar to select the desired date(s).

You may also use the export button to export the results to a .csv format for use in Excel, Google spreadsheet, etc.



You can download it as a pdf when you click on the print report button.

**10. AUTOMATIC TRANSFER FOR EHR/EMR**



Select Image Settings from the home screen and click Transfer Settings button. Select Export Settings to access the transfer engine for EMR and EHR programs.

Automated Image Transfer settings

Worklist settings

Enable Image Storage to EMR

Time to Transfer images

When study is closed     When program is closed     Manual transfer

Select images in Study window and click 'Transfer' manually.

Target settings

Store image to folder

Create a new sub folder for each session date (YYYY-MM-DD)

File name format

Custom format (use the keywords in curly braces)

Draw timer information on images

Draw R/L eye information on images

Draw image number on images

Image format :

Ignore images earlier than :

Ask for confirmation before starting transfer

**10.1. Transfer Options**

Worklist settings

Enable Image Storage to EMR

Time to Transfer images

When study is closed     When program is closed     Manual transfer

Select images in Study window and click 'Transfer' manually.

Check the box “Enable Image Storage to EMR” to activate this feature.

“When the study is closed” Will automatically transfer patient images each time a new study is completed

“When the program is closed” Will automatically transfer patient images each time you exit EyeCheckup.

**NOTE:** When a newly created study is closed or EyeCheckup is closed, a dialog box will pop up to confirm the transfer.

“Manual transfer” Allows you to select individual images from a patient’s study to transfer

**10.2. Target Settings**

Browse to the drive where images will be transferred/stored. You may also create a new sub-directory for each session by selecting the “Create a new subfolder...” checkbox.

The file format may be chosen from the pulldown.

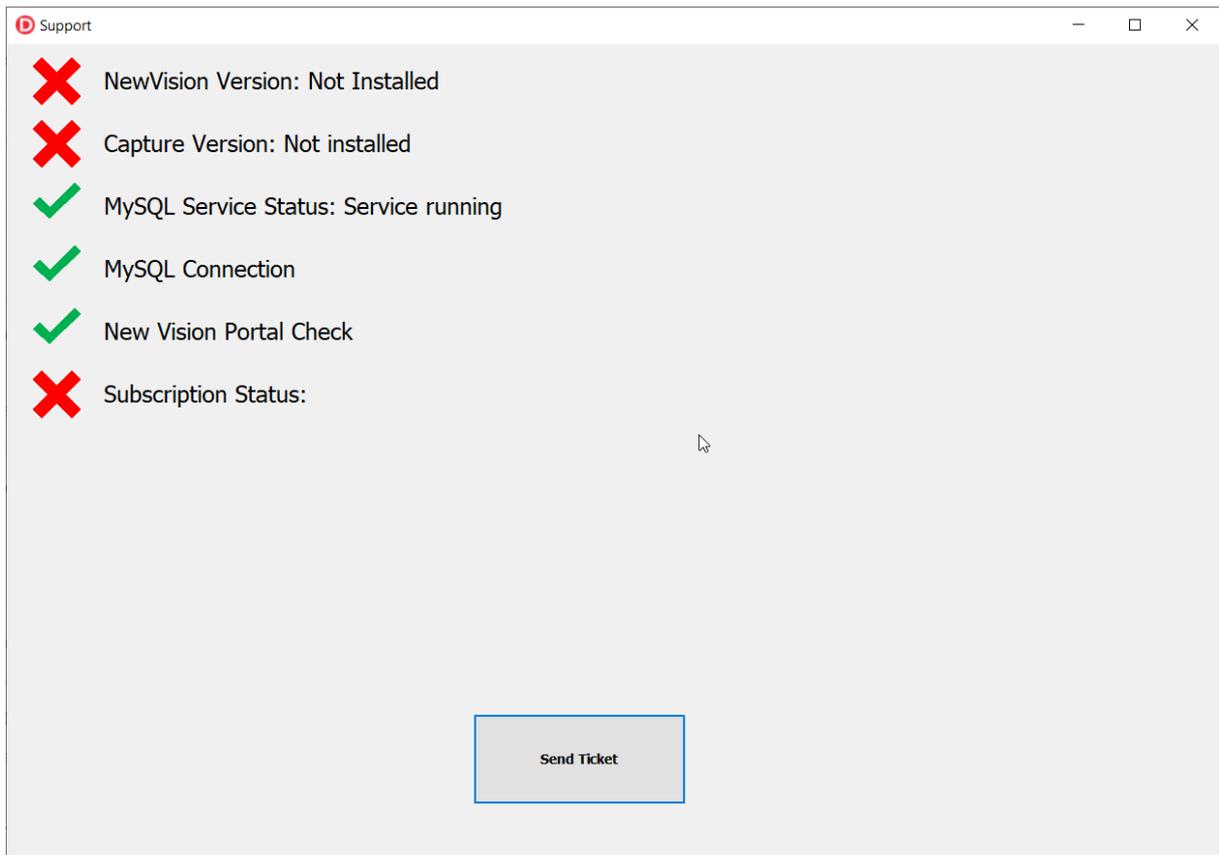
You can also customize which fields are transferred by choosing “<custom>”. Available fields are listed on the right side of the dialog box. Click on the Custom Format field to unhide the available fields.

**NOTE:** Curly braces “{ }” surround each keyword field. Each field must be separated by any character, except curly braces.

**NOTE:** Original patient images and data remain in the database and are not altered.

## 11. REQUEST SUPPORT

This feature allows the user to submit trouble tickets in a quick and effortless manner. To initiate a trouble ticket simply click the icon on the bottom right corner of the main screen.  The first thing that will happen is you will see a pop-up window that shows the results of some quick tests:



Please note any items that do not have a green checkmark by clicking on the “Send Ticket” button. Clicking this button will open the following browser window:

support.nvfundus.com/ticket\_new2.php?ticket\_id=4898&hash=kjbUGBKnbGVKJBNlkrjbKJCV/blkjBLHB

### Support request

**Name**  
Азар Тес|

**Email**  
Enter Email

**Phone**  
Enter Phone

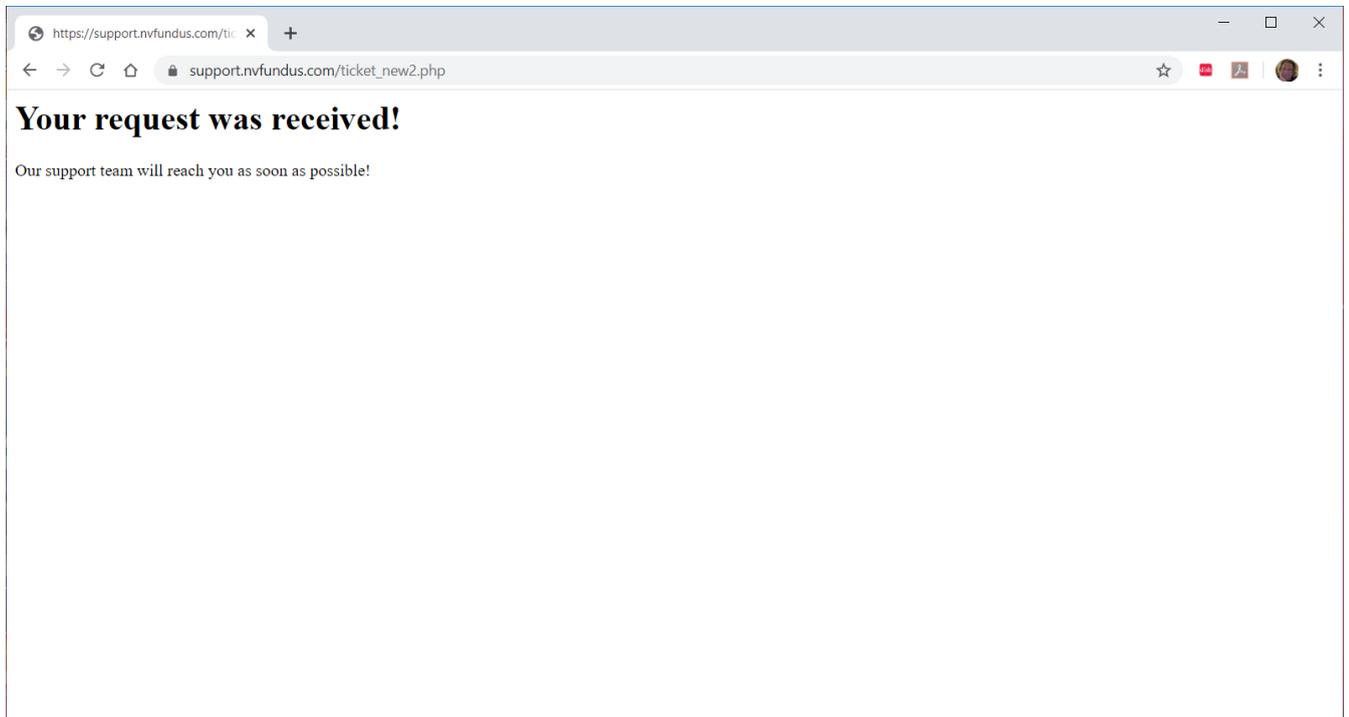
**Description**  
Describe the issue in detail

Attach a screenshot describing the problem \*\* Attach multiple screenshots as a ZIP archive

Выберите файл | файл не выбран

Submit Cancel

Provide your name, E-mail, phone number, Description of your issue, and attach any relevant Screenshots or documents that you feel will help. Once you have filled out the fields hit the submit button. You will receive a confirmation screen that your issues have been received. All pertinent log files are automatically sent to our team so they can troubleshoot your issue as quickly as possible.



**12. SERVICE AND MAINTENANCE**

EyeCheckup Client is not independently user-serviceable. When the service is needed, maintenance is provided by URAL Telekom expert personnel, including the subscription fee, if necessary, specialist personnel performs the maintenance during the maintenance. There is no automatic update feature.

Refer to the SM.003 Software Troubleshooting and Service Manual for detailed service and maintenance information.

### 13. EYECHECKUP TROUBLESHOOTING

It is recommended that an IT professional handle troubleshooting.

The following table defines troubleshooting codes that may be found in EyeCheckup Client error messages. If the following troubleshooting steps do not resolve the issue, restart the EyeCheckup Client and try the update first, or contact EyeCheckup at [info@eyecheckup.com](mailto:info@eyecheckup.com).

Troubleshooting Code	Likely Cause	Action
001	No customer resolution.	Contact EyeCheckup Customer Support.
101	Customer internet connection is down.	<ol style="list-style-type: none"> <li>1. Check the computer internet connection.</li> <li>2. Ensure the computer firewall is not blocking EyeCheckup communication through port 443.</li> </ol>
102	EyeCheckup servers are down.	<ol style="list-style-type: none"> <li>1. Check the local internet connection according to Troubleshooting Code 1 above.</li> <li>2. Check the image file size.</li> <li>3. Wait and attempt later.</li> </ol>
103	Patient image(s) deleted or corrupted	Check the image input directory to ensure patient images exist and are not corrupted
201	Read/write permissions of the install folder.	<ol style="list-style-type: none"> <li>1. Navigate to the install location of EyeCheckup.</li> <li>2. Verify read/write permissions on the install directory and corresponding child directories/files.</li> <li>3. Verify sufficient disk space on the hard drive/partition where EyeCheckup is installed.</li> </ol>
202	Read/write permissions of the report save folder.	Check permissions on the selected manual and autosave directories.
301	Update file corruption.	Attempt downloading the update again.
302	File Corruption / not found	Check the file location and its contents and try again.
401	Invalid images	EyeCheckup client verifies if the images are Optic Disk Centered or Fovea Centered and rejects images that are not identified as such.
402	Low-quality images	EyeCheckup client checks the image quality and rejects such unacceptable images.
403	Confusing the right or left images ordering	EyeCheckup client automatically identifies right and left Optic Disk centered (ODC) or fovea centered (FC), and displays them on the screen in designated slots.

**14. GLOSSARY**

**R:** Right

**L:** Left

**QR:** Quick Response

**ODC:** Optic disk centered

**FC:** Fovea centered

**EHR:** Electronic Health Record

**EMR:** Electronic Medical Record

**LDAP:** Lightweight Directory Access Protocol

**DB:** Database

If you notice any serious incident that has occurred in relation to this device, please report to us and the Competent Authority in your Member State.

For questions or help contact URAL Telekom at +09 (0535) 766-6383 or email [info@eyecheckup.com](mailto:info@eyecheckup.com)