CENTER OF INFORMATION TECHNOLOGIES "NELIAN

# DIANEL®-MICRO - Digital microscopy automation (Medicine)

Software user manual

Moscow

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## List of used abbreviations

PC - Personal Computer
DBMS - Database Management System
LMB - Left mouse button (action)
RMB - right mouse button (calls the context submenu)
MNK - Microscopy of native blood
ACC – Admin Control Center - End User License Administration Software
USB – Data transfer device for medium and low speed computer peripherals.
SL - Type of key or license

## Terminology

**License** (license agreement) is a special file that activates the Software with the functionality selected by the user for an agreed period.
**A USB key** is a physical hardware security device (a kind of USB drive) with a completely unique identification that is connected to one of the computer's USB ports and protects the information received while working in the Software.
**A software key is a** protection file with a completely unique identification that is installed on the user's PC to protect information received when working in the Software.
**System requirements** - requirements for the parameters of the user's PC
**CD-ROM with Dianel-Micro software** - electronic media with Dianel-Micro Software installation file, manuals, additional literature, etc.
**Functionality** - the main functions provided by the Dianel-Micro Software.

# Introduction

### About the Dianel-MICRO Software

Professional software «DIANEL®-MICRO - Digital microscopy automation (Medicine)», (hereinafter referred to as the Program, Software, Dianel®-Micro), is widely used by medical specialists both in private and public medical institutions. Designed to automate optical laboratory research, objects and environments in transmitted or reflected light with photo and video, which simplifies the work of a doctor.

The Dianel®-Micro software is compatible with most popular USB digital camera, from the simplest to well-known brands, and has a friendly, intuitive user interface in English.

# 1. General information

## 1.1Basic information

| | |
|---|---|
| Name | Software «Dianel®-Micro - Automation of work on digital microscopes (MEDICINE)» |
| Manufacturer | Limited Liability Company «Nelian Information Technology Center» (CIT «NELIAN» LLC) |
| Address | Russia, 107023, Moscow, VN. TER.G. MUNICIPAL DISTRICT SOKOLINAYA GORA, PER SEMYONOVSKY, D. 15, POM 1, FLOOR 4, ROOM. 12,16,16A, 17, 18 |
| Telephone | +7 (925) 518-25-41, (+7 926 747 555 1) |
| Email | manager@nelian.ru |
| Website | http://nelian.ru/ |

## 1.2Technical Support

For technical support, refer to the website of the manufacturer «Nelian Information Technology Center» www.nelian.ru, section «Support» and study the information provided there. If you did not find the answer to your question, please contact us:

**+ 7926-747-5551,** + , + , + email: manager@nelian.ru, skype: office-nelian

## 1.3 Electronic Registration on the site

Subscribe to the news on the site www.nelian.ru to receive notifications, download and install the update of the DIANEL®-Micro Software, as well as receive information about new developments of LLC Center for Information Technologies NELIAN.

## 1.4System requirements

Dianel®-Micro is supported by PC with system requirements:

System requirements for the Dianel-Micro Software depend on the resolution, light sensitivity and year of manufacture of the digital camera used.

Operating System - Windows 7 or above, 32 (x86) and 64 bit are supported.

CPU/Processor: Intel DualCore 2 GHz or above

RAM: for x86 - from 2 GB, for x64 - from 4 GB

CD/DVD burner - for recording studies on CD/DVD;

USB x 3 pcs: USB2.0 or USB3.0 (depending on the camera).

Communication Protocols (The camera used must support one of the following communication protocols): Direct Draw, Direct Show, TWAIN

Video card - built into the Intel processor, separate, hardware from AMD, NVidia, with an internal memory of at least 512 MB.

Hard drive HDD - SATA II, from 20 GB - for storing photo and video files.

Screen - Full HD LCD with a diagonal of 20 «.

### 1.5Purpose

Software « DIANEL®-MICRO - Digital microscopy automation (Medicine)» is a professional Software for automating optical laboratory research, which makes it possible to simplify the work of a doctor.

### 1.6 Dianel-micro software Functionality briefly

The main functions provided by the Dianel-Micro Software:

• Keeping a file of researches;
• Full-screen visualization of studies;
• saving photo and video files to the database;
• analysis of micro-objects in images;
• measurements of samples from 0.05 microns;
• documentation;
• carrying out a comparative analysis of images by measurements of micro-objects,
• printing of protocols of comparison on measurements of micro-objects,
• printing of photographs obtained during the work on a digital microscope with a USB camera;
• quick creation of a textual conclusion on the general analysis of a microscopic sample, smear, sample.

## 2. How to install Dianel-MICRO software

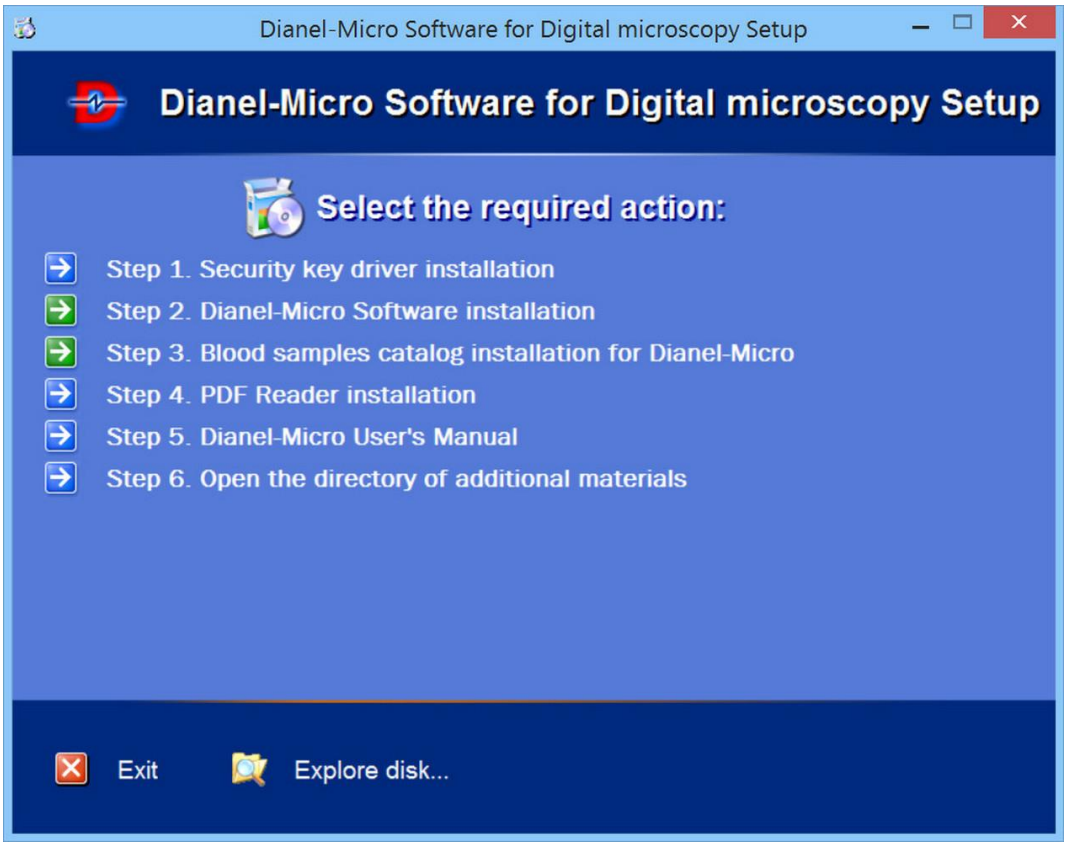
Full installation of the Dianel®-Micro Software is possible both from the installation CD from the delivery set, and from the website of the Dianel-Micro software developer - https://nelian.ru/auxpage_skachat-po-dianel-mikro-dlja-cifrovoj-mikroskopii/?lang_iso2=en

The installation procedure from CD is different to the installation from the website.

Installation of Dianel-Micro software is performed on a personal computer with Windows OS, according (1.4 System requirements)

### 2.1 Option to install the dongle driver and software from the CD

Insert the installation CD with the Dianel-Micro software into the CD/DVD drive and wait for the initial installation screen to appear with the recommended step-by-step installation procedure. (Allow of the Setup Menu, or run the file: launcher.exe from the CD).



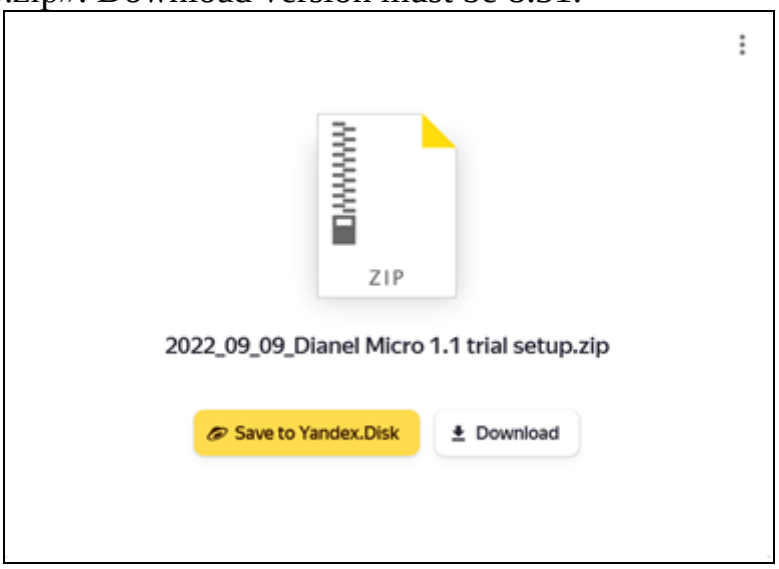

Start the installation by selecting the desired action from the list and follow the further instructions of the installer. Restart your computer when prompted.

### 2.2 **Installing the Sentinel HASP dongle driver**

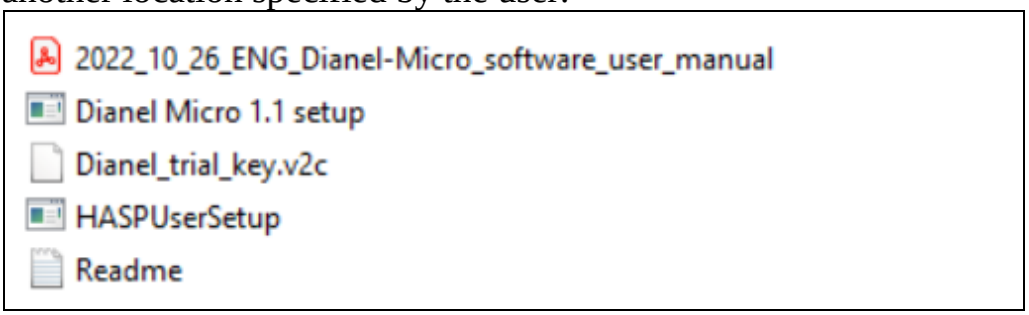
You need to install the driver for the Sentinel HASP security key - Dianel®-Micro software does not work without it.

You need to download the dongle driver version in the section «Support» ➔ «Download Dianel Software ➔ then select Dianel®-Micro Software for automation of work on the digital microscope» ➔ «Download Dianel®-Micro 60 days trial» (or follow direct link: https://nelian.ru/auxpage_skachat-po-dianel-mikro-dlja-cifrovoj-mikroskopii/?lang_iso2=en) then click Download button.

A download window will open in your browser. Click on the button «xxxx_xx_xx_Dianel Micro 1.1 trial setup.zip». Download version must be 8.31.

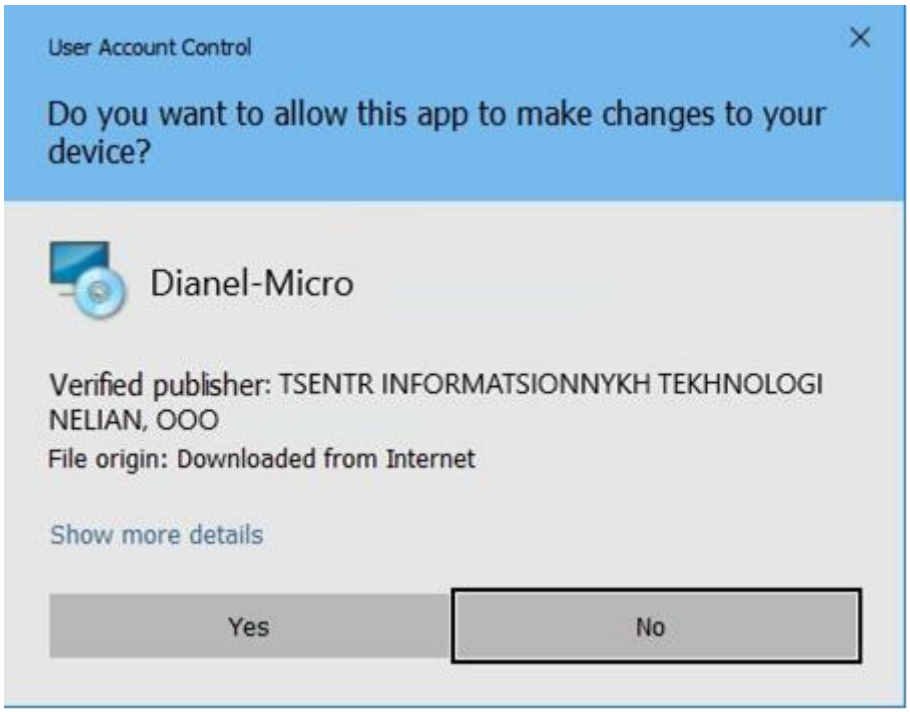


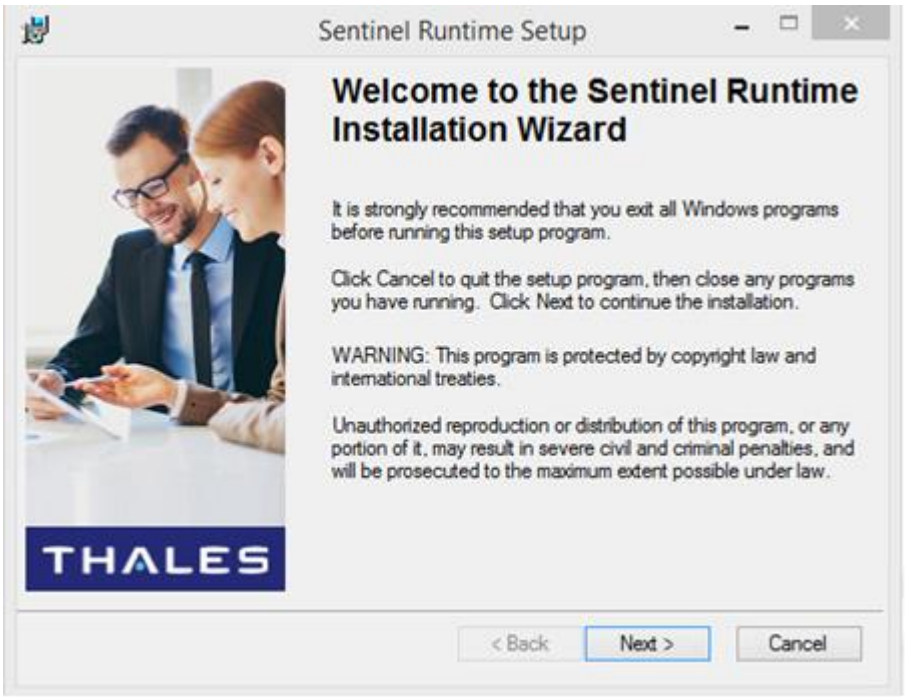
Click on the «Download» button, the file is automatically downloaded to the «Downloads» folder or to another location specified by the user.

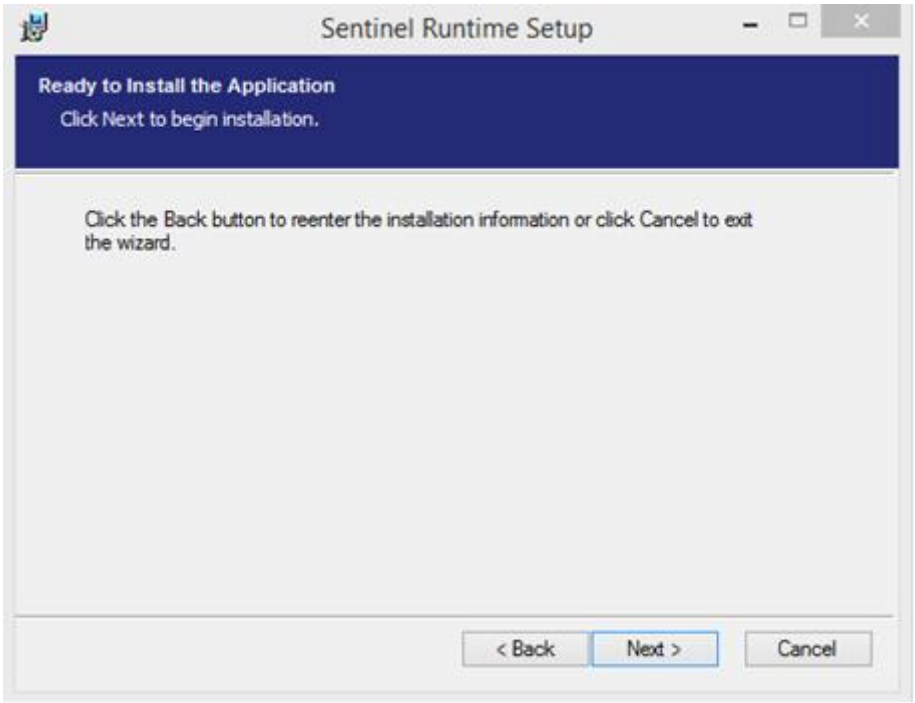



Double-click on the downloaded file, go to the folder and select the file «HASPUserSetup», and start the installation process of the selected file by double-clicking the mouse. The program will ask you to confirm the launch of the selected file.

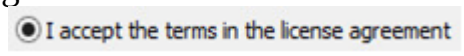
Click on the «Run» button. Further, when the program starts, a window will open asking you to confirm the installation of the dongle driver. Click on the «Yes» button.

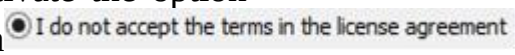




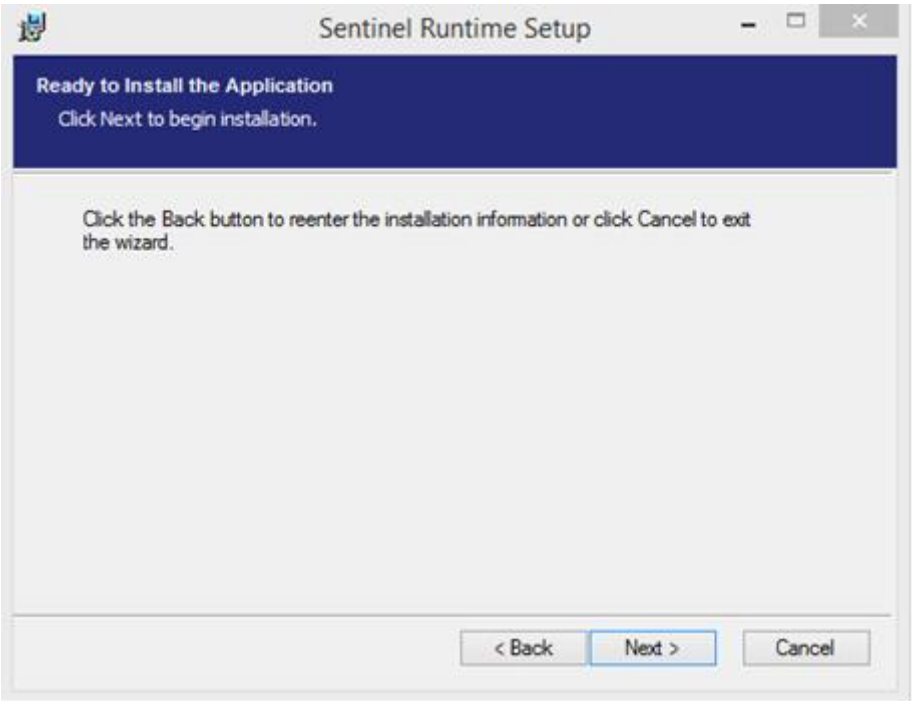

Then the program asks for permission to continue the installation - Confirm by clicking on the «Next >« button.

The next step, you will be asked to read the text of the license agreement. Please read this information carefully before proceeding with the installation. To accept the terms of this license agreement, activate the option 

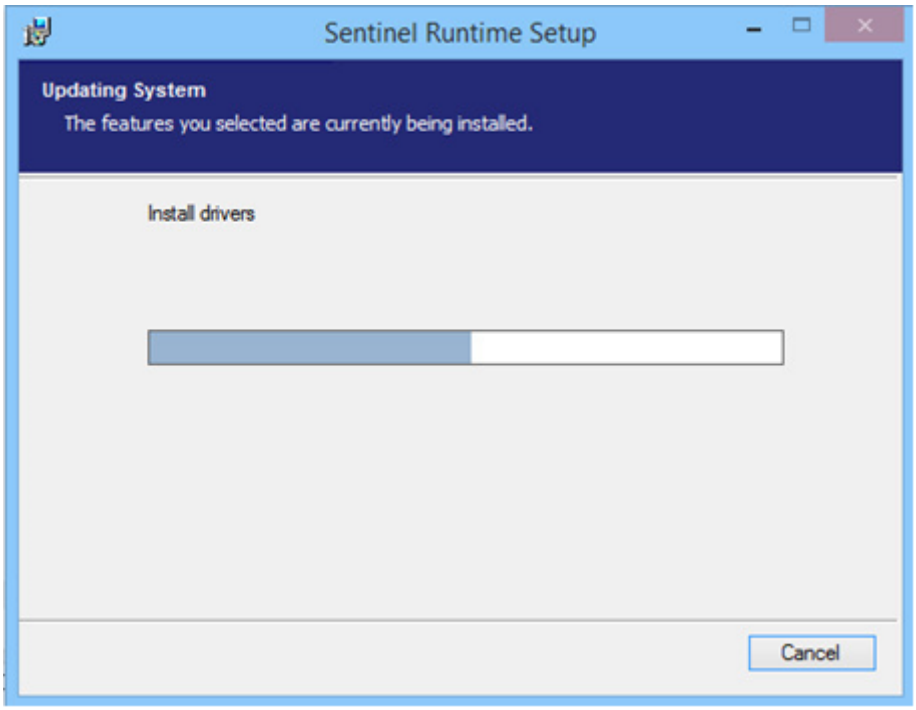
option setting «». On failure, set option 

, then further installation will be impossible.

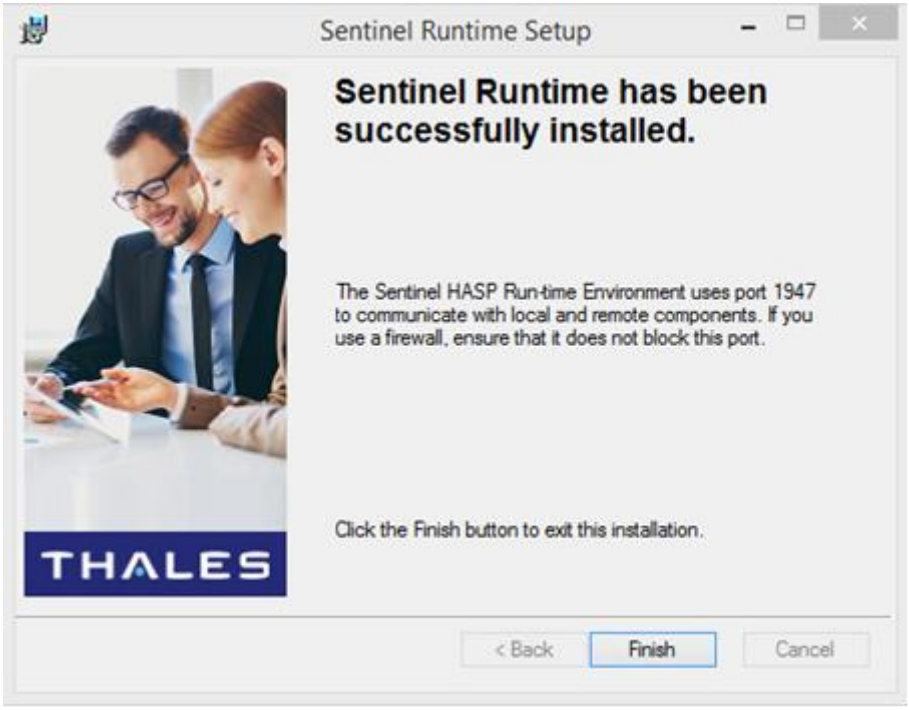
To continue installing the driver, you must confirm your decision by pressing the «Next >» button. After confirmation, a window asking you to install the driver opens.




To continue installing the driver, confirmation is required by pressing the «Next >» button. A window will open to continue automatic driver installation. Wait for the installation process to finish.




After the automatic installation process, a final confirmation window opens. Press the «Finish» button




The installation of the Sentinel HASP dongle driver is complete.
Now you need to plug the Sentinel HASP USB dongle into your computer's USB 2.0 socket - if you have one.

Next, we proceed to the next stage of installing the program: install the Dianel-Micro Program from the CD-ROM or download the distribution kit from the nelian.ru website, using the link: https://nelian.ru/auxpage_skachat-po-dianel-mikro-dlja-cifrovoj-mikroskopii/?lang_iso2=en and install the software.

### 2.3 Dianel-Micro software installation - preparation

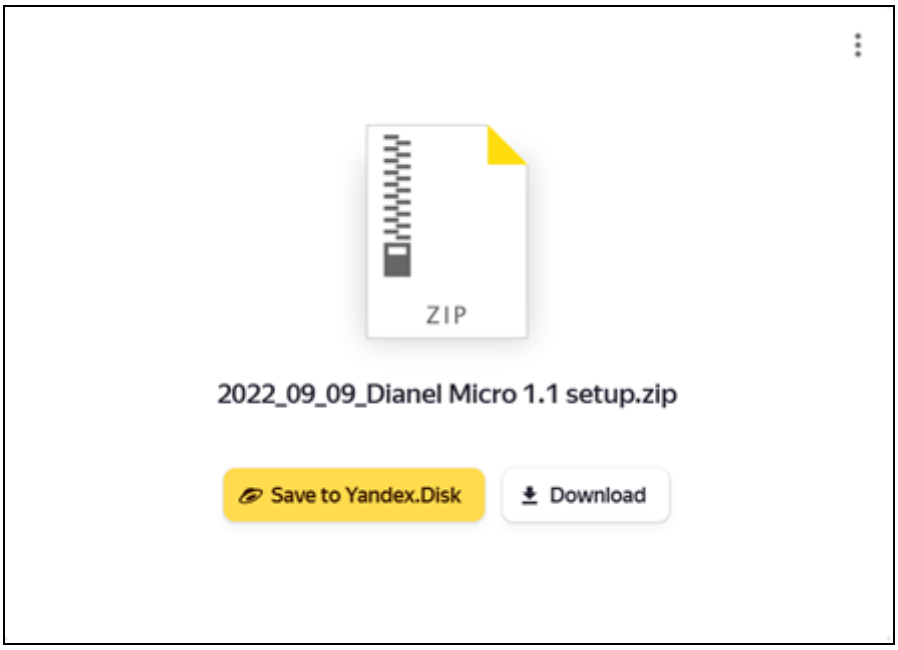
#### 2.3.1 Installation from CD

Start the installation of the program from the CD-ROM menu by selecting «Step 2. Dianel-Micro Software Installation». Then follow the instructions of the installer.

#### 2.3.2 Installation from the developer site nelian.ru

To prepare the software installation, run the previously downloaded and saved file, «xxxx_xx_xx_Dianel Micro 1.1 trial setup» (2.2). Double-click on the downloaded file, go to the folder and select the «Dianel Micro 1.1 setup» file to install the driver and start the installation process. The program will ask you to confirm the launch of the selected file, click the «Yes» button and follow the instructions of the Program Installer.

The download link for Dianel®-Micro software distribution updates is available on the page: https://nelian.ru/auxpage_skachat-po-dianel-mikro-dlja-cifrovoj-mikroskopii/?lang_iso2=en. Click on the «Dianel®-Micro Software Update» -> «Dianel®-Micro», ver. xx.xx.xxxx г.» button. A download window will open in your browser. Click on the «Download» button, the file is automatically downloaded to the «Downloads» folder or to another location specified by the user. Go to the folder and select the «Dianel Micro 1.1 setup» file to install the driver and start the installation process. The program will ask you to confirm the launch of the selected file, click the «Yes» button and follow the instructions of the Program Installer.( 2.2 )




⚠**It is not possible to use the Dianel ®-Micro software again, free of charge, after the FREE period (trial period) has expired!**

⚠**This version of the program includes the versions «Hemoscanning and MNC», «Medicine and Veterinary Medicine», Materials Science and Measurements - Automation of Microscope Research».**

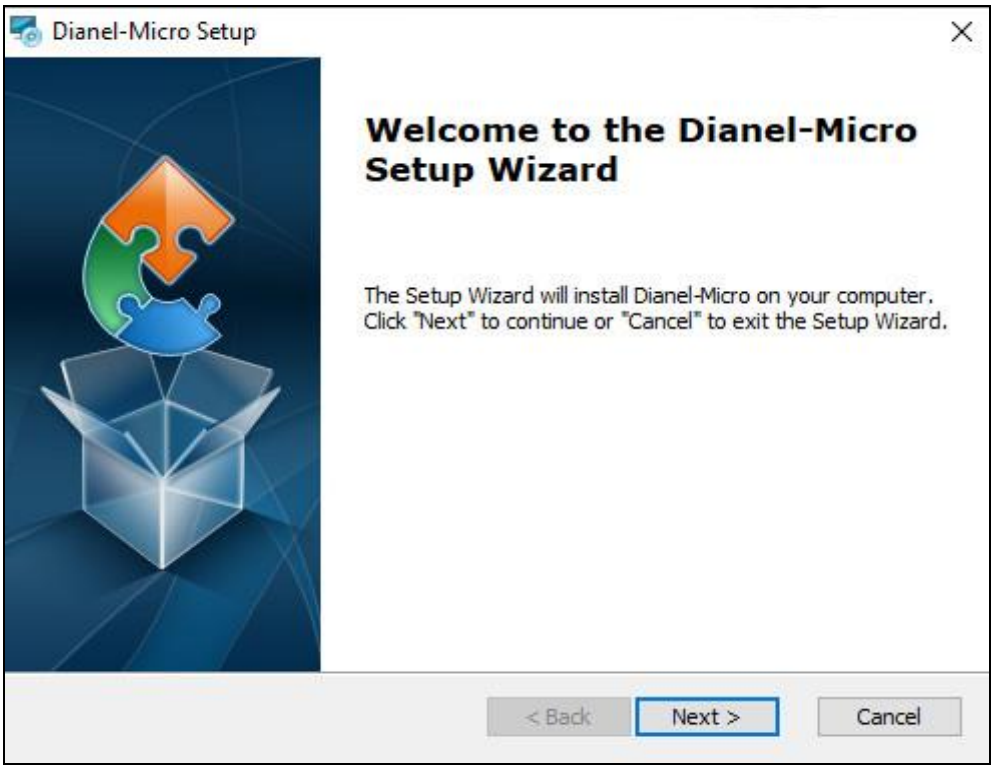
### 2.4 Installing Dianel ®-Micro software

By default, the Dianel®-Micro software is downloaded to the user's PC in the Downloads folder. Double click on this file. In the installation window that opens, confirm your consent to continue the installation by clicking the «Yes» button.

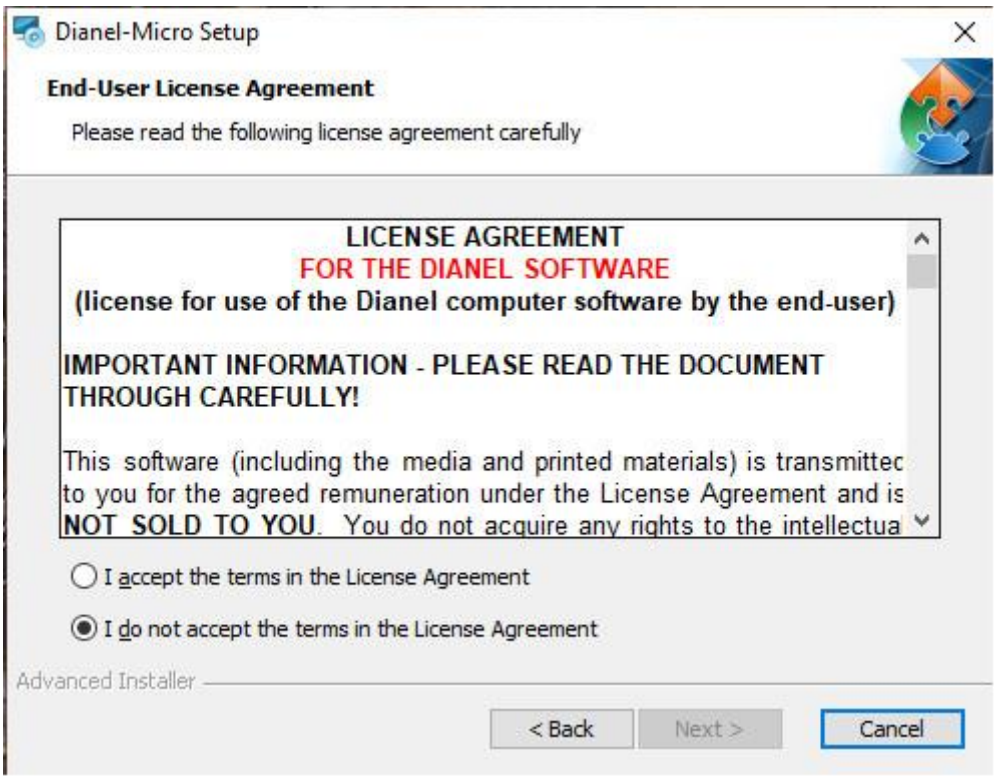
Next, in the opened window «Dianel-Micro setup» select the desired language and confirm the action by pressing the «OK» button.

In the next window that opens, the installation of the application continues automatically, requiring no action:

To continue the installation, in the next window that opens «Dianel-Micro setup», click the «Next» button:

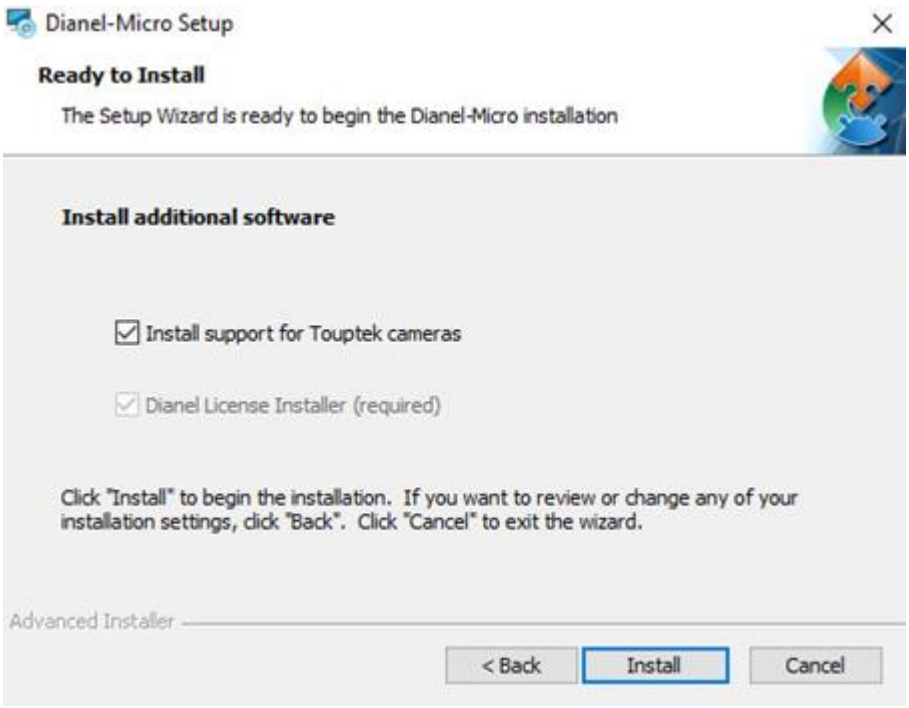



Next, you will be asked to read the text of the license agreement. Please read this information carefully before proceeding with the installation. If you accept the terms of this license agreement, activate the option «I accept the terms in the License Agreement « by checking the option «◉«. If you set the option «I do not accept the terms in the License Agreement», then the installation of the software will be interrupted. To continue installing the program, click «Next»:



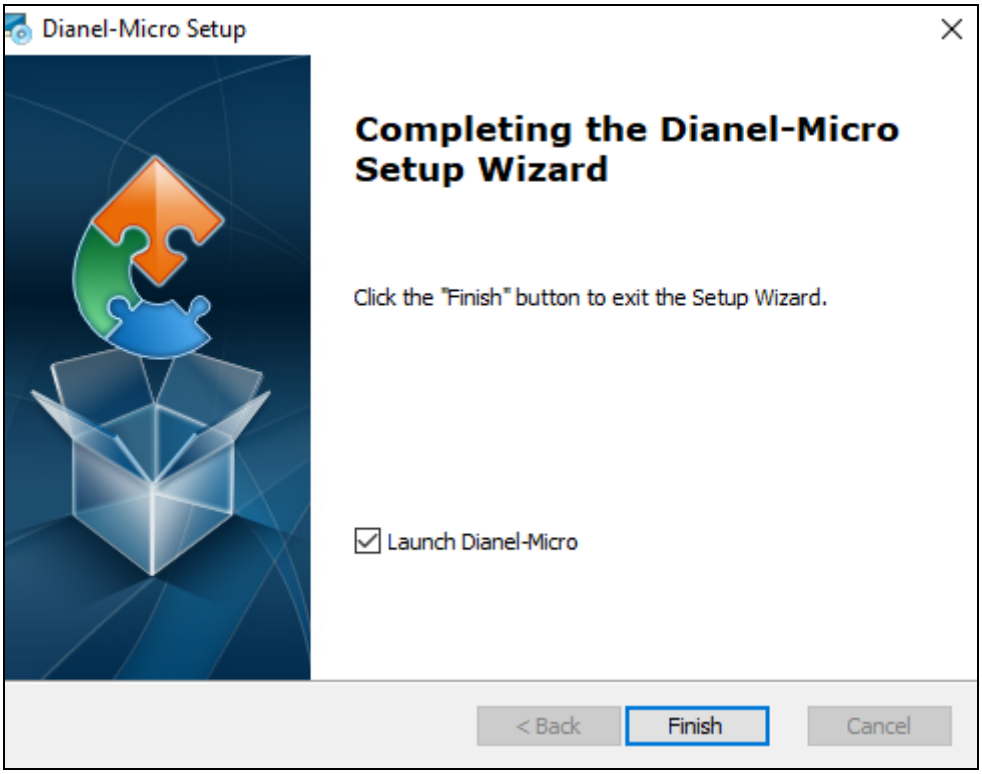

Next, we recommend to install additional software. To install the Drivers for digital cameras of the world's leading leader ToupTek ToupCam simultaneously with the Dianel-Micro program (which is convenient), it is recommended to leave ☑ Install support for Touptek cameras option

checked . If you are using a camera from another manufacturer, this option can be disabled. Accidental installation of the «ToupTek cameras» driver is safe and does not harm your computer (even if you do not need such a driver).
The Dianel-Micro program regularly updates the driver, which simplifies installation and allows the user to use the digital camera for the microscope more efficiently.

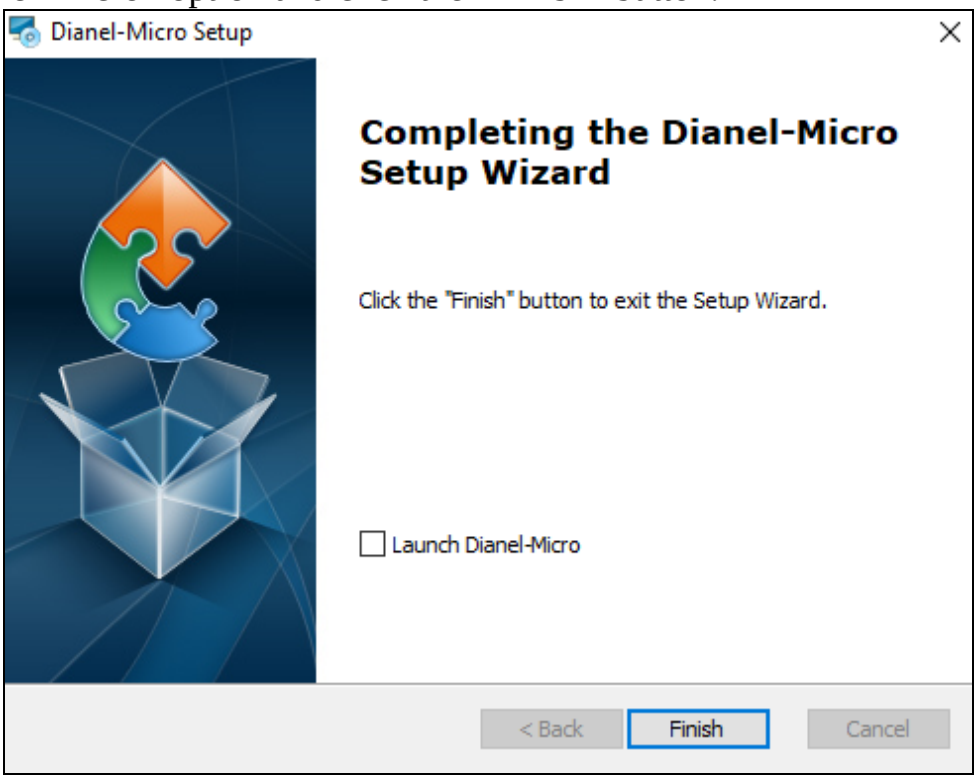



To continue the installation, click the «Install» button and wait for the automatic installation process to complete.
Further, the installation program additionally asks you to select the language of the required Dianel component: License Installer. The component is needed for simple and convenient activation of the license file for the Dianel-Micro program. You must select the required language and confirm with the «OK» button.

After the installation is completed, a window will appear on the screen informing the user about the successful installation of the Dianel-Micro software, and a shortcut for «Dianel-Micro» will be created on the desktop.




To exit the program installer, click the «Finish» button, and the program will be launched. If there is no need to further launch the program for research, you must uncheck the «Launch Dianel-Micro» option and click the «Finish» button.




The program is installed and ready to go.

⚠ **When you start the software, a window may open:**

**It is necessary to check if the Sentinel HASP license key (software or hardware USB key) is connected!**

1. A hardware USB key with «Trial mode» is included in the delivery package as agreed with the user. The key is installed in the USB connector on the PC and starts the key activation process, according to clause 2.2. Next, the Dianel software is launched, in accordance with clause 2.4.
   After the end of the «Trial mode» (60 calendar days), it is necessary to make a license request to technical support, in a way convenient for the client, in order to obtain a permanent license file for working with Dianel®-Micro software. To fill out a license request, you must specify the «Registered Serial Number of the Software», which is indicated in the user card.
2. The Sentinel software key file with "Trial Mode" is provided upon agreement with the user who has Windows 7 or a newer edition installed on the PC. The user receives the file with the software key "Dianel_trial_key.v2c" as part of the distribution kit and performs the key installation process in accordance with clause 2.4.1.
   At the end of the «Trial mode» (60 calendar days), it is necessary to make a license request to the Technical Support Service, in a way convenient for the client, in order to obtain a permanent license file for working with Dianel®-Micro software.

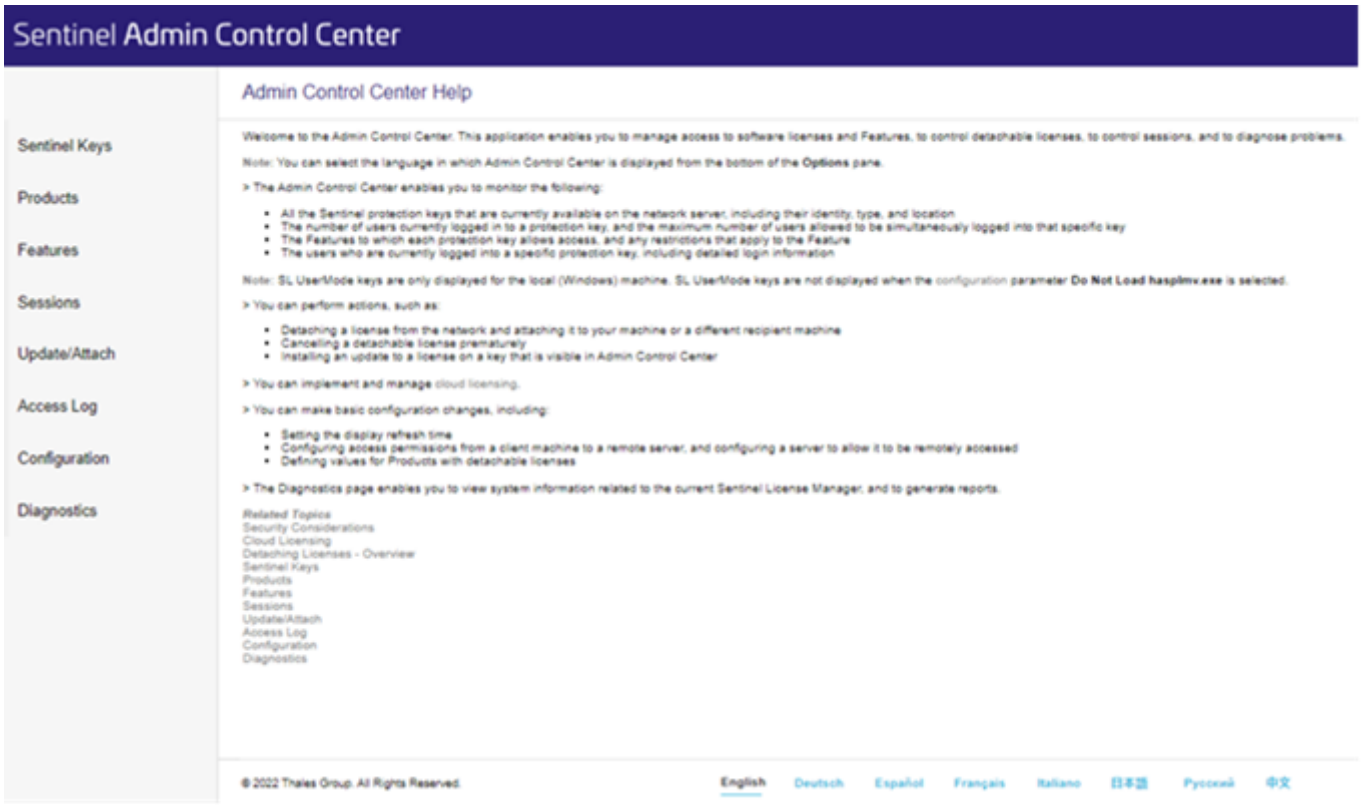
⚠ **To use the software, 2 types of licenses are provided: a «trial period» license - for 60 days and a permanent (SL) license without a time limit, provided at the user's request.**

⚠ **To prevent inconvenience in using the program, it is recommended to send a request 3-5 days before the end of the Trial Period.**

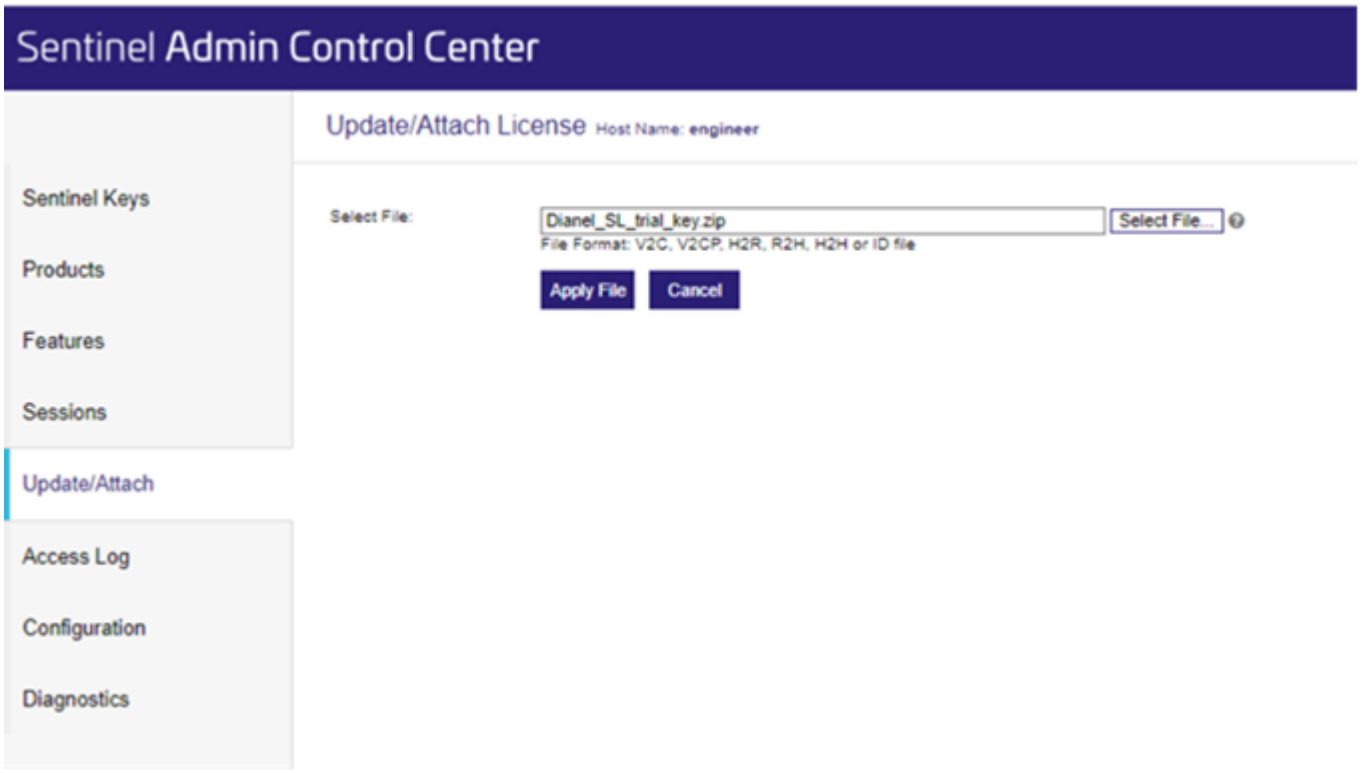
⚠ **At the request of the user, it is possible to provide a permanent license before the expiration of the license «trial period».**

### 2.5 Obtaining and Installing the Sentinel Key File (trial period license):

After the Sentinel software key driver has been installed (trial period license) start your web browser and navigate to following address: http://localhost:1947 or http://127.0.0.1:1947
The Sentinel Admin Control Center (ACC) page. You can select preferred language at the bottom of the page.




Next, in the ACC window, select the «Update / Attach».
Click on the «Select file» button and specify the previously received and downloaded file «Dianel_trial_key.v2c». Press the «Apply File» button.

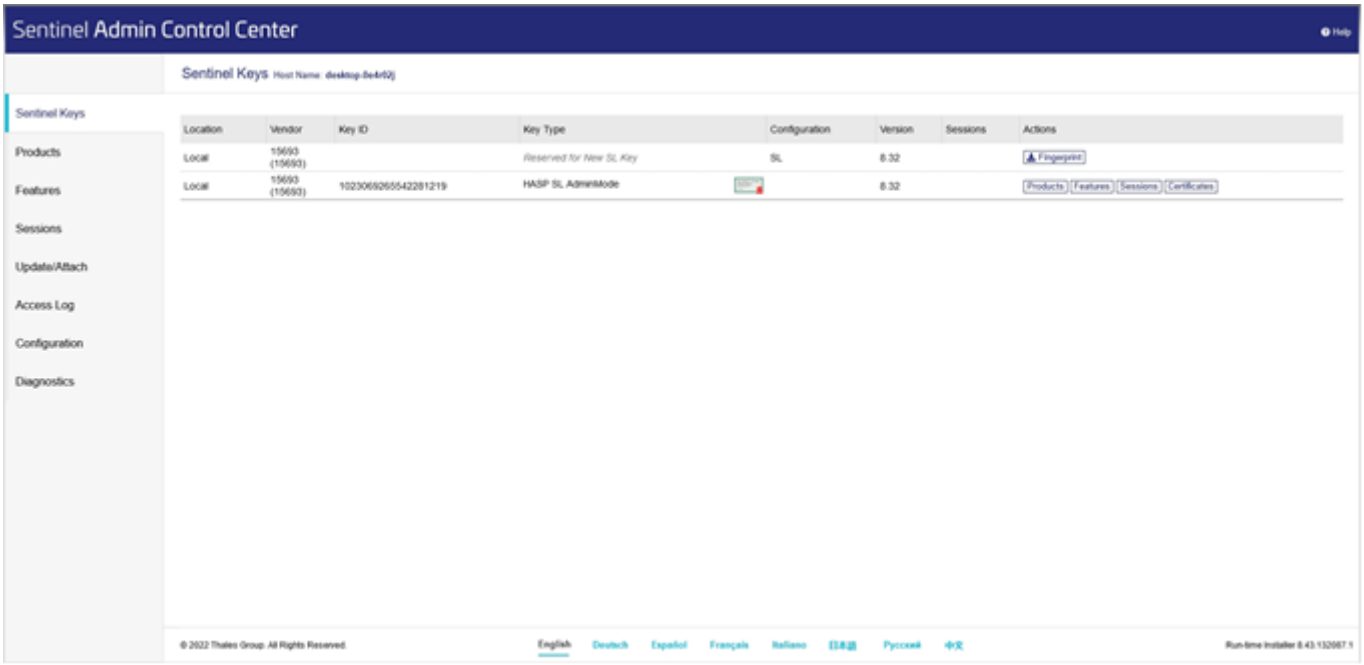



The file will install automatically. A confirmation window for attaching a license key will open.
The Trial License has been installed. Close the ACC window.
Now you can start working in the program.

2.6 **Renewal, obtaining and installation of SL - licenses:**

After the end of the Trial Period license or at the request of the user before the end of the Trial Period, a permanent SL license is provided, for this:

- Navigate to: http://localhost:1947 or http://127.0.0.1:1947
- select your preferred language in the lower part of the Sentinel Admin Control Center page.
- select «Sentinel Keys» and click on the button «Fingerprint» in the «Actions» column.




ACC will create a file and save it with a name like: fingerprint_15693.c2v in the Downloads folder on the user's PC.

- Send the saved file for license generation to manager@nelian.ru
- In response, the user receives an SL license file (For example: Dianel_SL_trial_key. v2c.) by e-mail and downloads it to a preferred folder.
- Next, in the ACC window, select the "Update / Attach" item and repeat the procedure for attaching the file, as described above

# 3. Launch of the program Dianel-Micro (Medicine)

Run the previously installed program by double-clicking on the desktop shortcut «Dianel Micro».

## 3.1. Initial software setup

### 3.1.1. Main program window

When you start the program, the main login window will appear.

Next, consider the purpose of the buttons in the main window.

### 3.1.1.1. Selecting the language of the Dianel-Micro program interface.

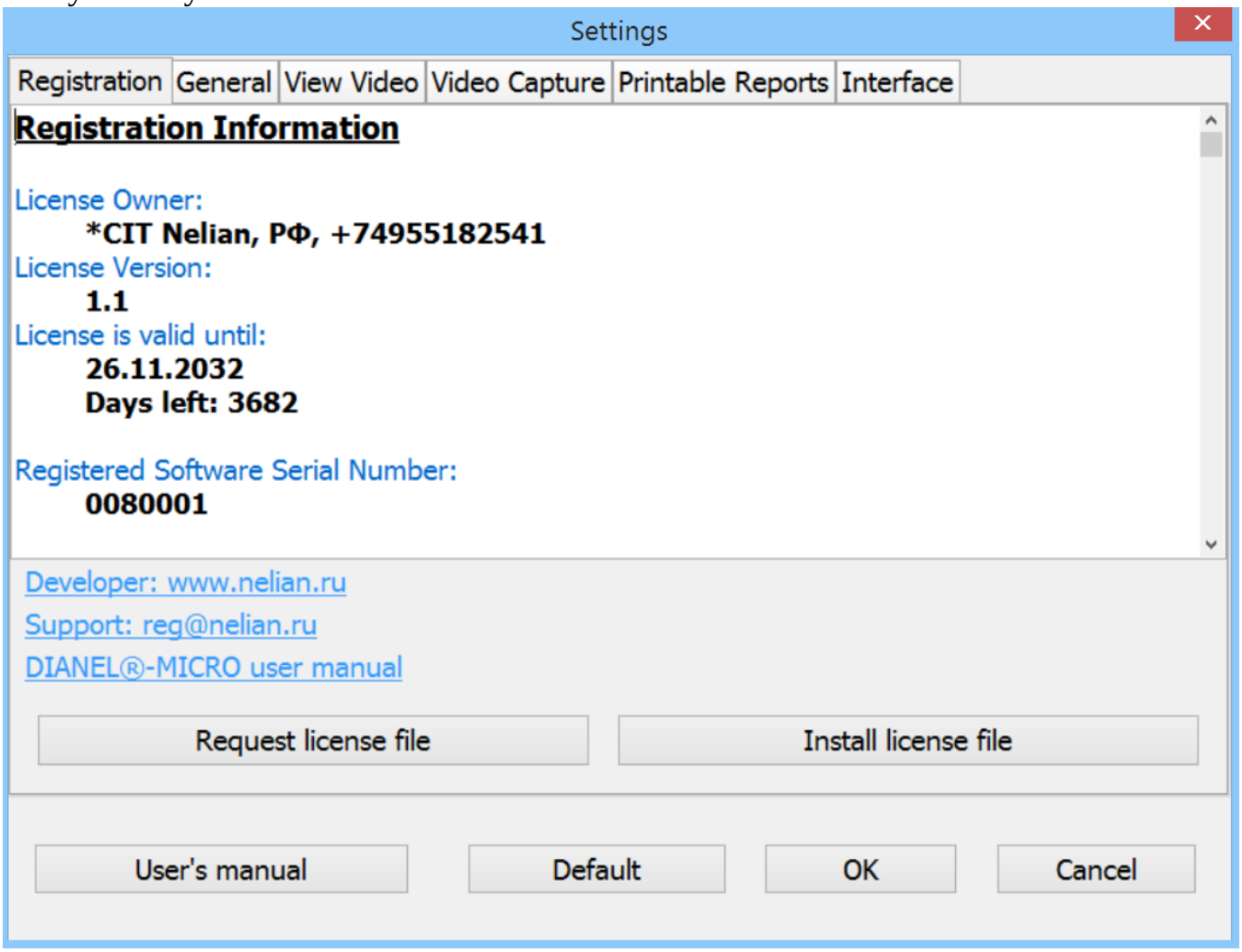
In the main window, you must specify the required program language.

### 3.1.1.2. Primary «Setting»

Go to the primary settings by pressing the «Settings» button. The corresponding «Settings» window opens with items:

- ***«Registration»***

Displays information on the term and mode of the license (trial or permanent), serial number, buttons for generating a request for obtaining a license file and installing it, the ability to study this User Guide.



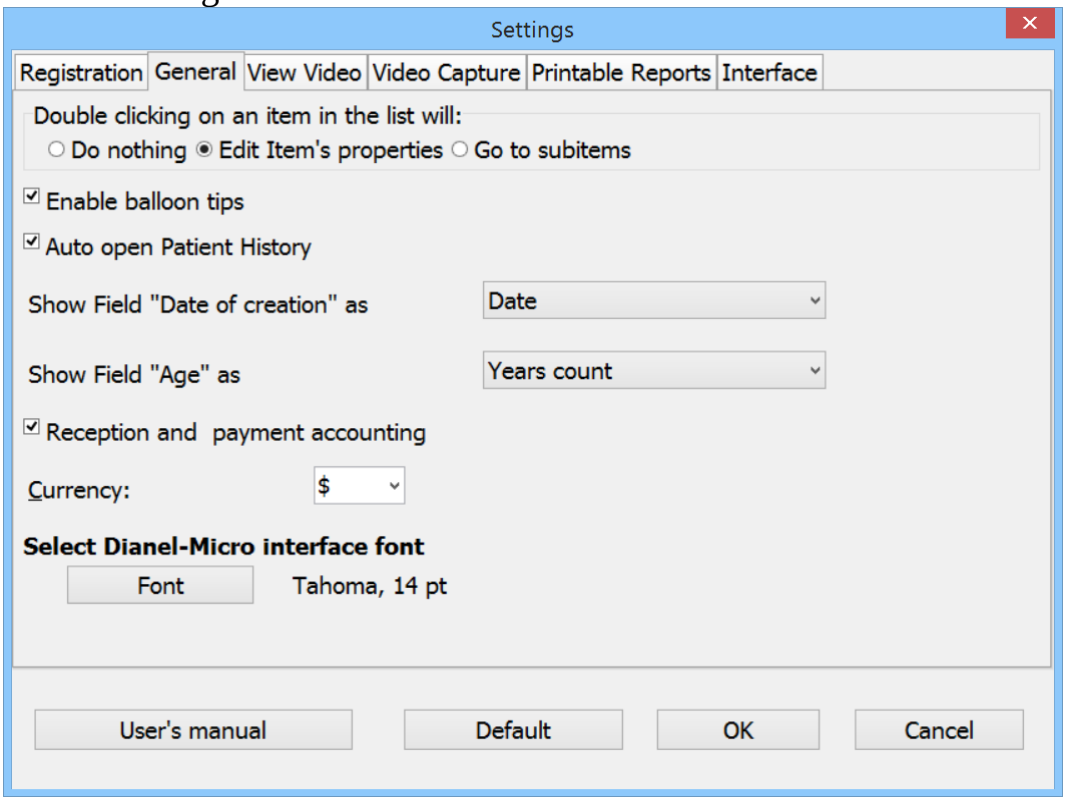

The process for obtaining a License is outlined below.
Pressing the «Default» button implies the acceptance by the Operator of the program settings.

- ***«General»***

The ability to customize the program interface at the discretion of the Operator. By default, there are marks on the standard functions, which can be changed if necessary.

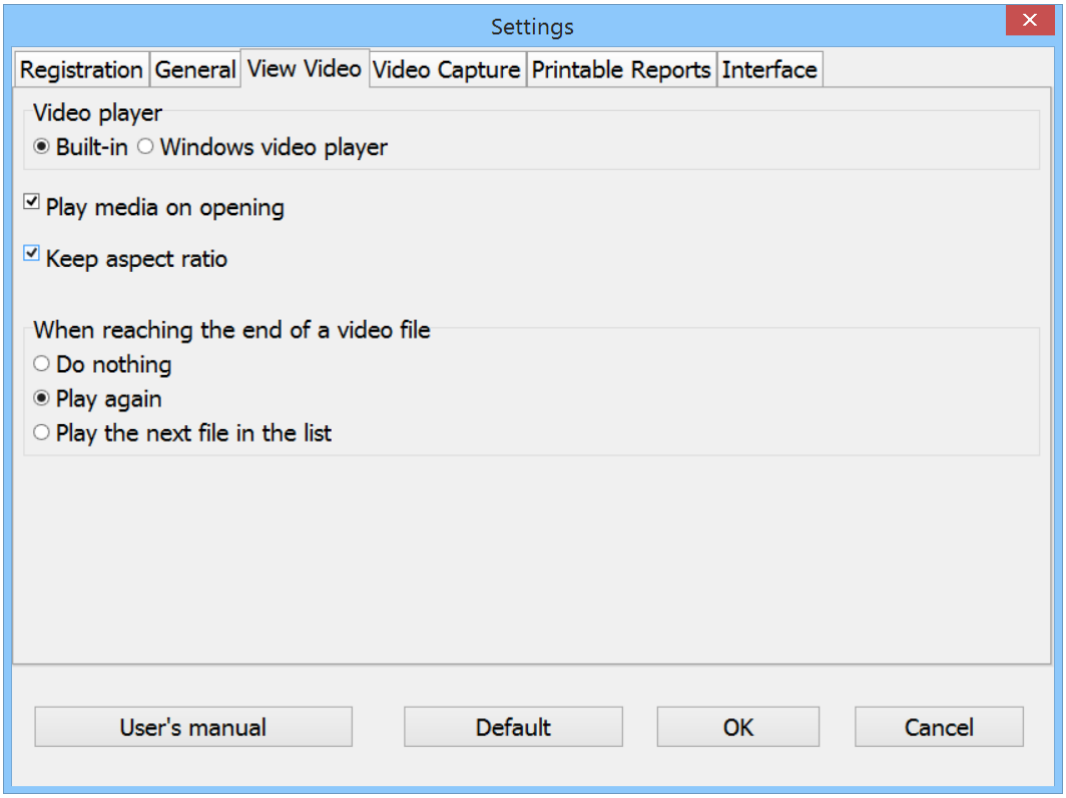
- «Do nothing» - inactivity, no program response to a double mouse click.
- «Edit iteam's properties» - the ability to make changes to the card of the selected Operator or Patient.
- «Auto open Patient History» - automatic transition to the window corresponding to the request is performed.
- «Date of creation» - there is a choice, by arrow, by indication of «Number of years» or so on.
- «Age» - there is a choice, by the arrow, by indicating only «Date» or «Date and time»
- «Reception and payment accounting» - used to select the currency when paying for services. Under the condition of constant free admission of patients, uncheck this function. When making changes, to confirm the actions performed, confirm by pressing the «OK» button.

- At the discretion of the Operator, it is possible to select the name and size of the interface font using the «Font» button.




➢ ***«View Video»***

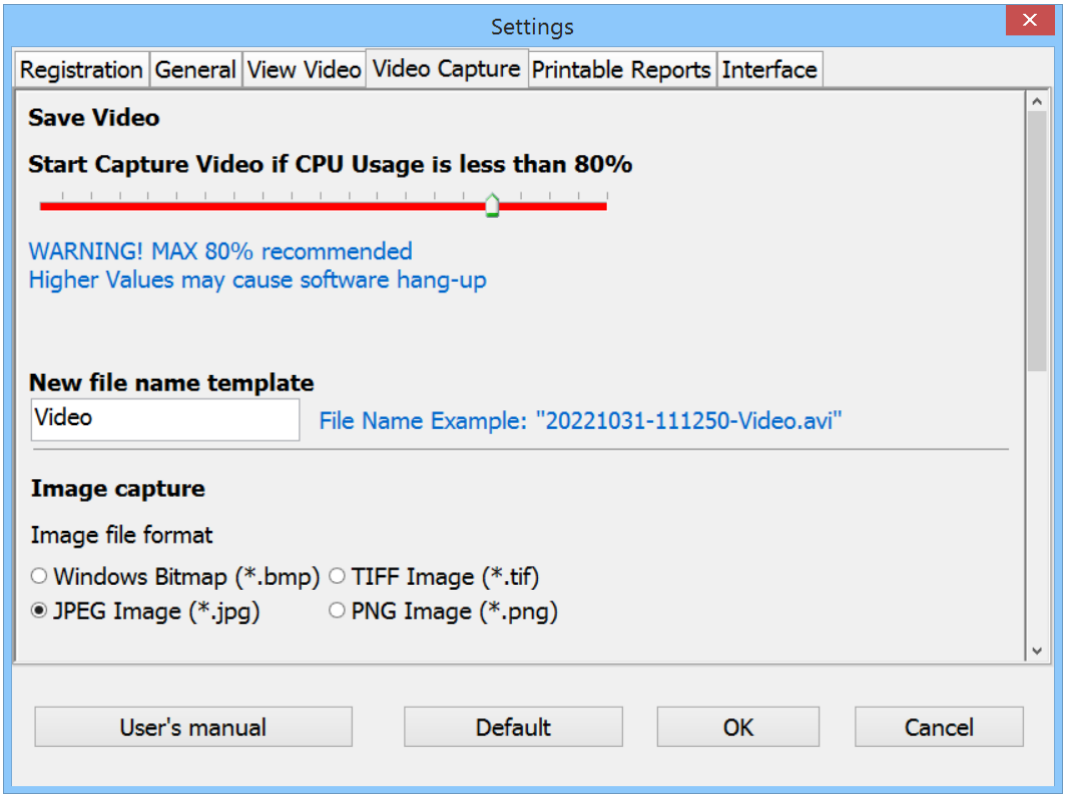
In the «Settings»->«View video» window, by default, there are marks on the standard functions, which, if necessary, can be changed at the discretion of the Operator.



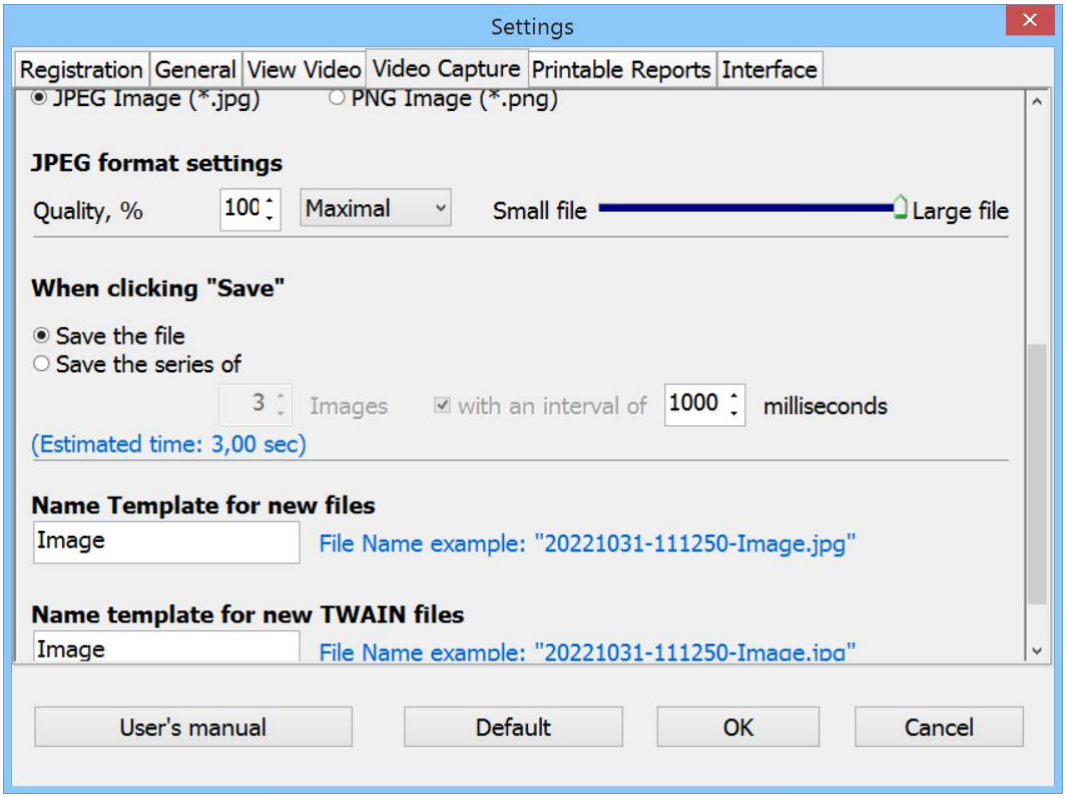

When making changes, to confirm the actions performed, confirm by pressing the «OK» button.

➢ ***«Videocapture»***

In the «Settings» window, option «Videocapture». This function intended for real-time testing of samples, obtaining and saving images in the selected format during testing. By default, there are marks on the standard functions, which, if necessary, changed can be at your discretion.




- Saving video - a scale indicating the limitation of the ability to launch the Video Capture function when the user's PC processor is loaded in percent.
- New file name template - enter the name of the video files that will be saved during the research
- Image capture – set at the discretion of the operator, specify the format for saving images.
- JPEG format setting - at the discretion of the operator, the quality parameters of the received images of this format are set.
- If you select another of the proposed formats, do not configure.
- When you click on the «Save» button:
- - when you select the «Save the file» item, one selected file saved
    - when choosing the item “Save the file series of”, the desired number of images and the interval for saving them are indicated
- Name template for new files - enter the name of the image files that will be saved during the study
- Name template for new TWAIN files – enter the name of the image files that will be saved in the process of conducting research using the button of the same name.




When making changes, to confirm the actions performed, confirm by pressing the «OK» button.

- ***«Printable Reports»***

The program has the ability to Print all the results or save them to a convenient place on a PC, on external media (flash drives, hard drives, any CDs). When printing out the results of the examination, it is possible to select the number and size of photographs taken in the program.

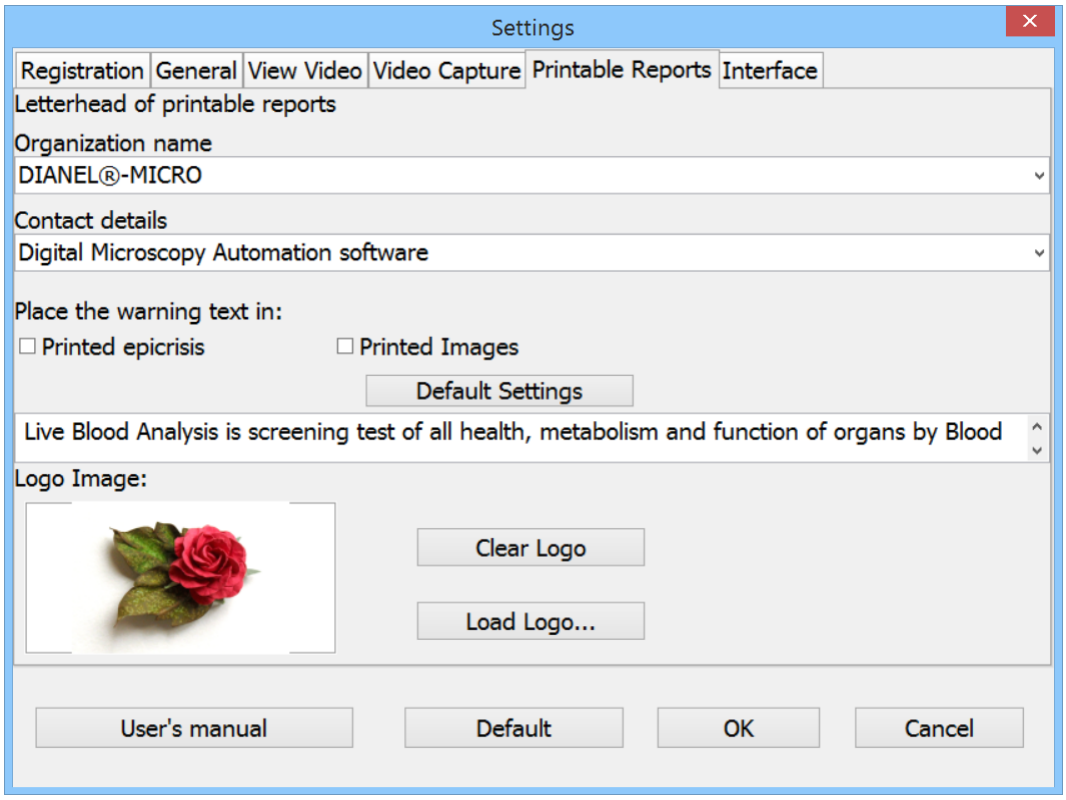
In the «Settings» window, the «Printable Reports» option is responsible for the final form of the test result that is printed.

• «Letterhead of printable reports» - indicates the name of the company, contact details of the company.

• «Place the warning text in» - check the box to place it (Print epicrisis/Print images) or use the «Default Setting» button to indicate the necessary / required warnings, and enter the text of the warning in the text field.

• It is possible to insert your company's logo by pressing the « Load Logo» button (recommended size of the uploaded logo, width to height - 2:1) or « Clear Logo» - if you refuse the previously entered logo.

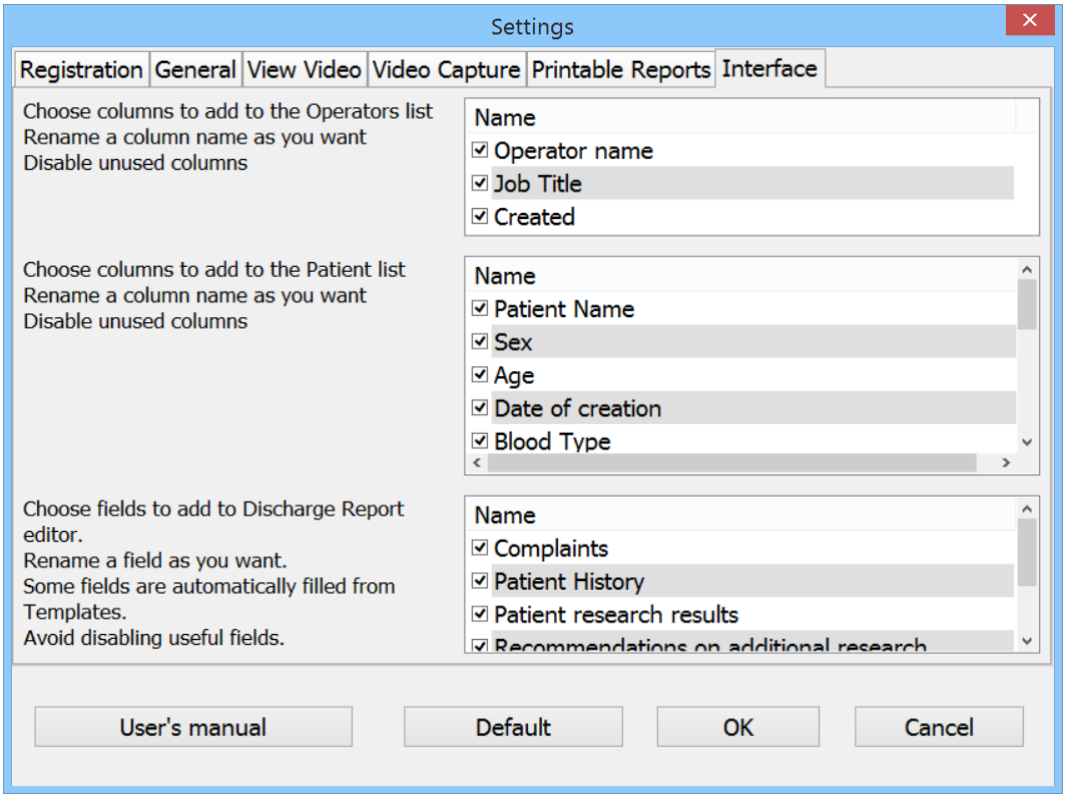
By default, there are marks on the standard functions, which, if necessary, can be changed at your discretion.




When making changes, to confirm the actions performed, confirm by pressing the «OK» button.

- ***«Interface»***

it is possible to change the default parameters and field names. To select the required fields, in the «Interface» option, set the «checkmarks» at your discretion. Renaming the required fields is done by double-clicking on the left mouse button in the selected field, renaming is canceled by pressing the «Esc» button on the keyboard.



When making changes, to confirm the actions performed, confirm by pressing the «OK» button

#### 3.1.1.3. «Information»

When you click on the «About « button, the corresponding window opens, where the name, version, date and license number of the software, the purpose of the software, the necessary system information, etc. are indicated. After reviewing the above information, click the «OK» button.

All settings are done. You can go to work in the program.

#### 3.1.1.4. «User's manual»

- This «User's manual» is opened in the «.pdf» format (the version installed with the program).
- Download the updated version of the document from the manufacturer's website in the section: Support-> Download documentation for users of the software Dianel®-2.1, Dianel®-Pro, Dianel®-iON, Dianel®-Micro-> Dianel-Micro Medicine sofware User's Guide.

#### 3.1.1.5. « Enter»

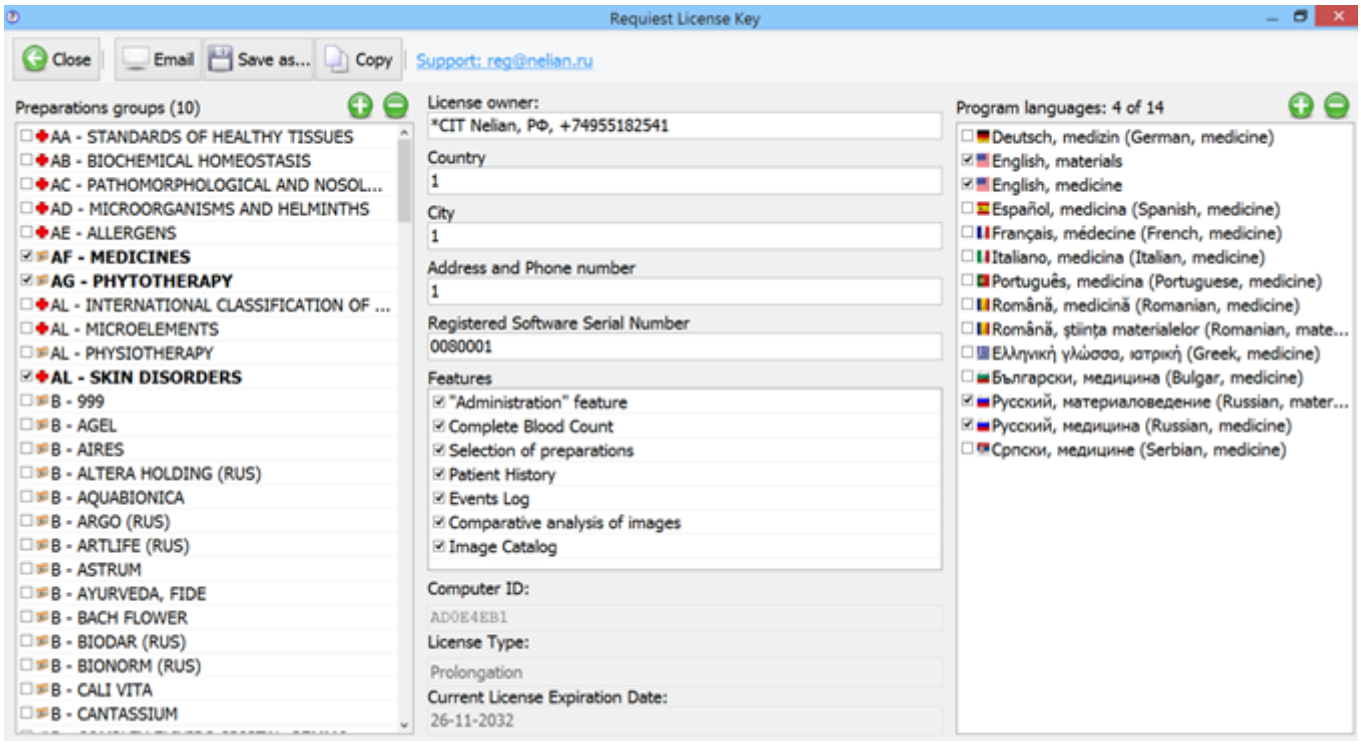
To start working in the program, click the «Enter» button in the main window. (3. Launch of the program Dianel-Micro (Medicine))

*«License»*

The Licenses window will open, notifying you of the remaining number of «Trial Mode» days if you do not have a permanent license.

To continue working in Trial mode, click the «Continue» button.

To obtain a permanent license, it is recommended to request a few days before the end of the Trial Mode (60 days). Click on the «Request license file» button, then in the «Request License Key» window that opens, fill out the proposed form and send it by Email to the manufacturer's address (1.2 Technical Support)




When filling out a license request, it is required to indicate the «Registered Software Serial Number», which is indicated in the user card for the hardware key and in the Packing list for the software key.

After receiving the license file, to the user's e-mail:

***For software key*:**

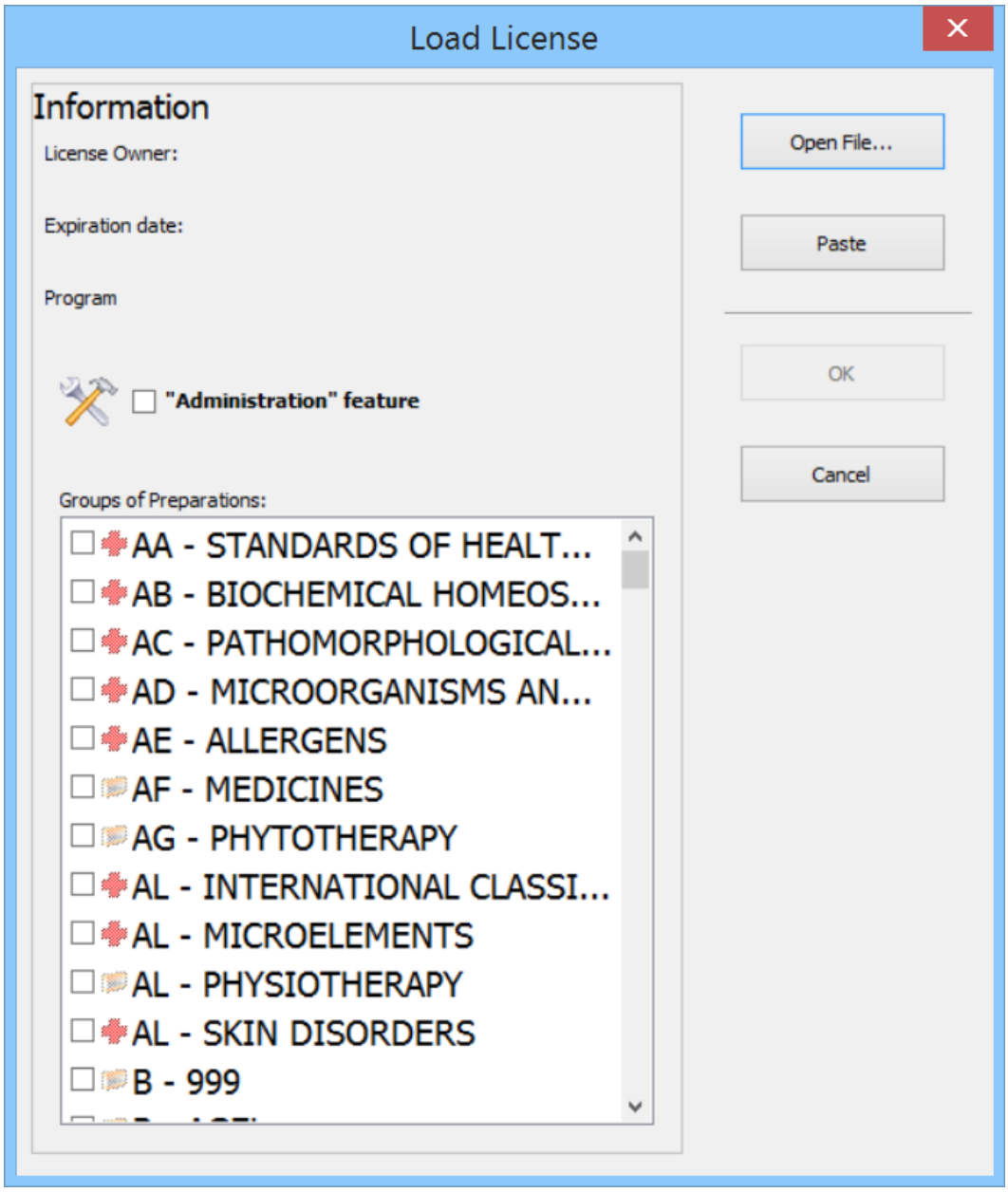
- activate the license file received from the manufacturer by clicking the «Open file» button in the License loading window;
- repeat the procedure for updating the license, by clicking the «Update / Attach» button in the ACC window, described above

***For hardware key*** - Click on the «Install license file» button. The «Load license» window opens, then download the received file by clicking the «Open file» button.

- ***«Administration»***

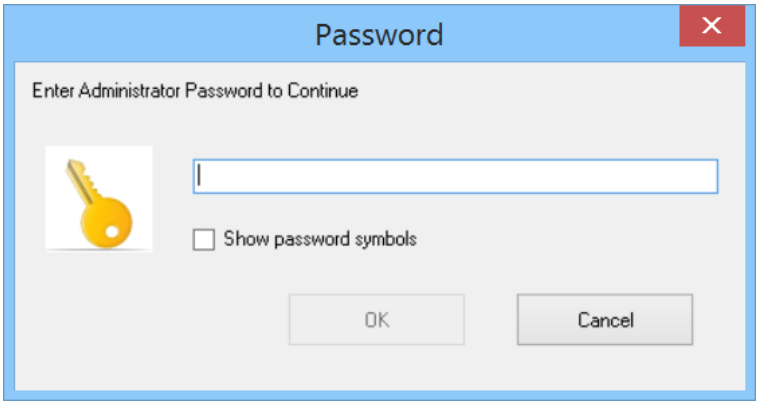
When obtaining a permanent license, it is possible to connect the «Administration» function, which helps to control the commercial use of the program in clinics, health centers, etc. To do this, indicate the function with a «tick» in the window «Load license». (3. Launch of the program Dianel-Micro (Medicine))

⚠ **The function is provided only upon request to the manufacturer and subject to the use of a hardware key.**




After the license is loaded, the Administration button appears in the main program window.

Next, a window opens Entering the administrator password, which is indicated on the Authentication Card.

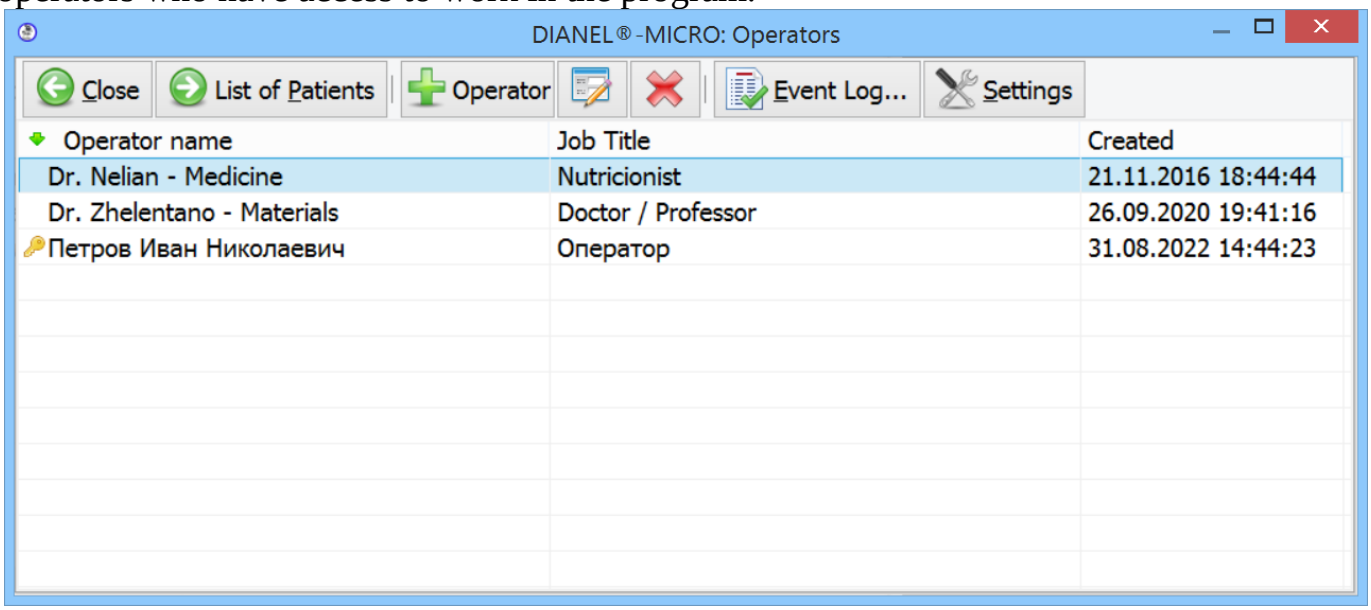



After specifying the password, click «OK» and go to the window «DIANEL-MICRO: Operators».

## 3.2 Testing algorithm in the program

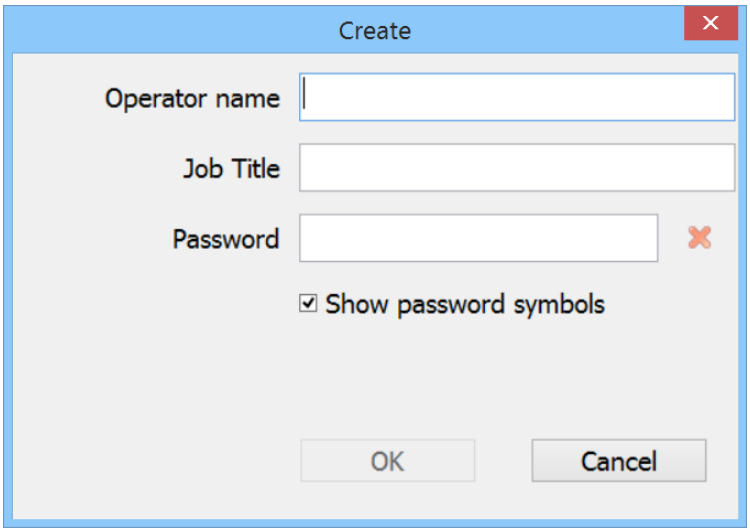
### 3.2.1 New operator

Next, the window «DIANEL-MICRO: Operators» opens. This window displays a list of all operators who have access to work in the program.




When starting a new operator, you need to enter personal data in the list of operators. In the «DIANEL®-MICRO: Operators» window, it is possible to create an unlimited number of Operators by pressing the button -> he «Create» option opens, where the required operator data is entered.

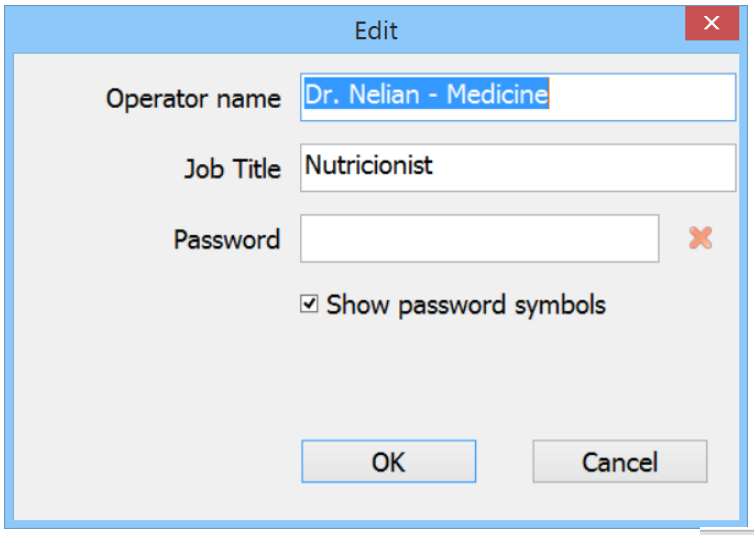
To save confidential data about patients, provided that the program is used by several operators, a password is entered. Each doctor is matched with those patients and their studies that he previously conducted, which simplifies appointment planning and finding patients in the list. Also, each operator entry can be password protected.



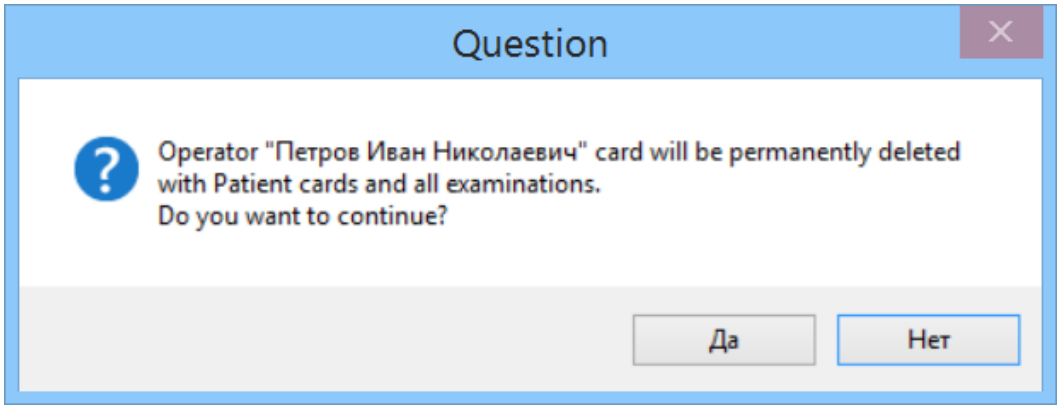

- when filling in the «Password» field of this window (the operator chooses a password at his discretion), the operator gets the opportunity to use patient data individually.
- if you refuse to fill in the «Password» field of this window, all entered patient data and conducted studies will be available to all operators who have access to use the software.

- In the «Create» field, you can uncheck or check the «Tick» ☑ Show password symbols to implement the ability to display / hide the entered password. To change/reject the previous password, press .

After entering the data of the new operator and confirming the actions performed, by pressing the «OK» button. The «DIANEL-MICRO: Operators» window reopens, where each operator newly added to the card index is displayed. Operator's card can be edited -> double click on «Edit», or use the F2 shortcut key, or . After editing, to confirm the operator's data, press the «OK» or «Cancel» button if you refuse to edit.

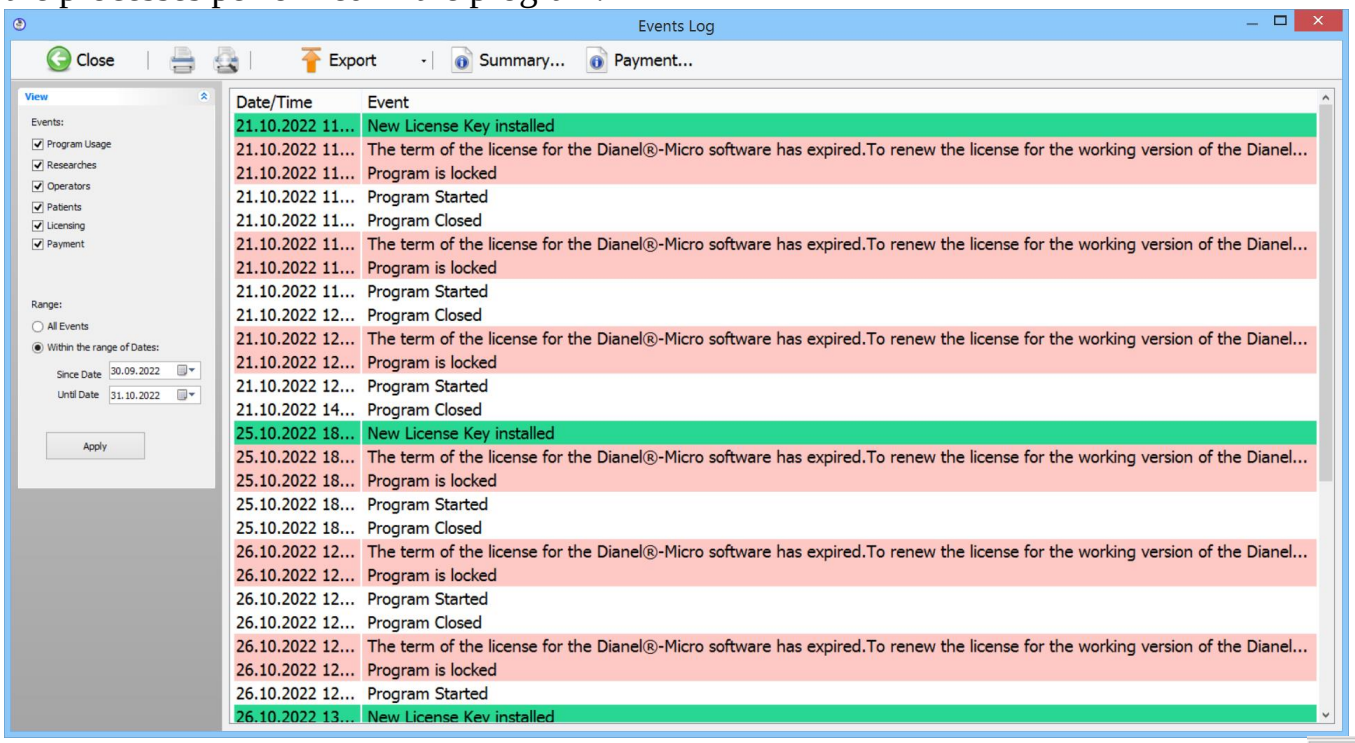



You can delete an unnecessary operator record with the button in the «DIANEL-MICRO: Operators» window, after clicking LMB on the operator you want to delete. A window opens with a warning about the subsequent deletion of the Operator with all the Patient cards that this operator created. To confirm the actions to be performed, click the «Yes» button, otherwise - «No».

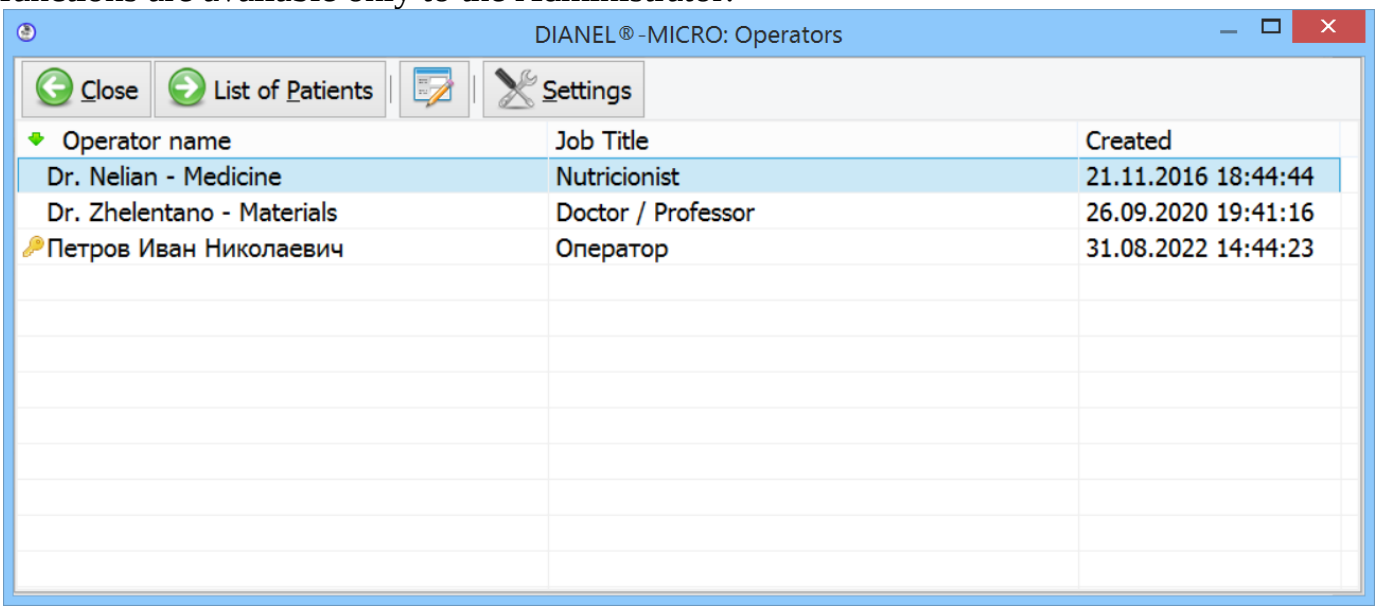



This function is applicable:
- while working in Trial mode.
- if the Administration function has not been activated in the current license. When the Administration function is activated, in order to delete an Operator, it is required to enter the administrator password specified in the user card.

When using this program by several operators, we repeat the process of filling in the operator's data the required number of times. To confirm the performed actions, click the «OK» button. The transition to the window «DIANEL-MICRO: Operators» is performed with the display of new entered Operators.
Additional features of the window is the ability to view the «Event Log», which displays all the processes performed in the program.




When the «Administration» mode is activated, there are no buttons on the panel: add and removal operator cards, as well as the ability to view the «Event Log». These functions are available only to the Administrator.

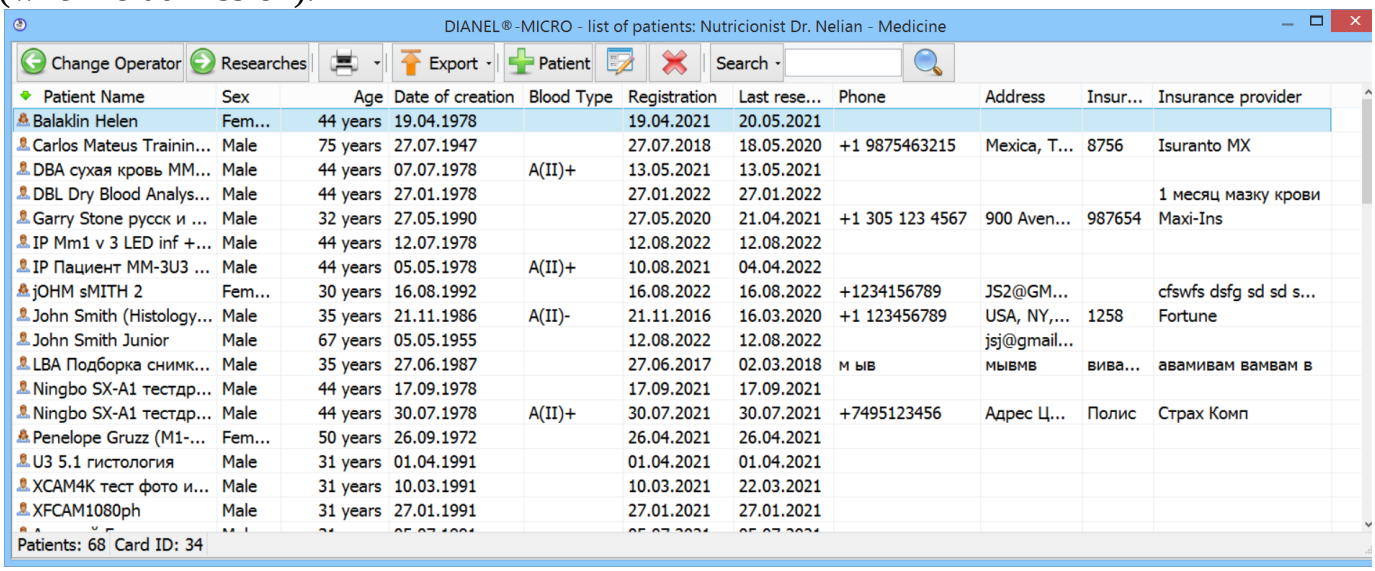



To continue working in the program, the previously registered Operator selects his data from the open list in the «DIANEL-MICRO: Operators» window.

### 3.2.2 Introduction to the patient and verbal questioning of the patient

To continue working in the program, select the operator in the «DIANEL-MICRO: Operators» window and then press the «List of Patients» button.

In the opened window «DIANEL-MICRO - list of patients: ... full name ...» a list of previously admitted patients is displayed with the possibility of adding new patients. Create a new patient card (when accepting a new patient) or select a previously created patient card (when re-admission).

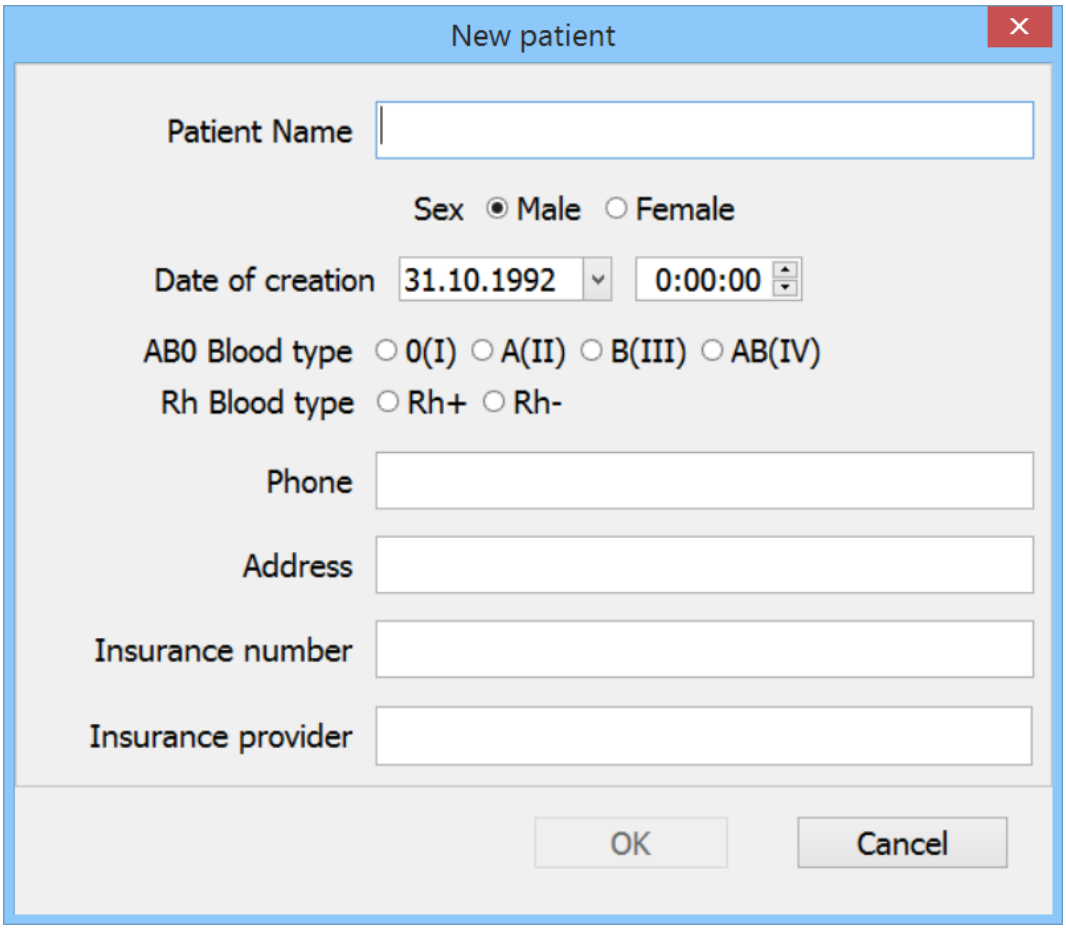



| Patient Name | Sex | Age | Date of creation | Blood Type | Registration | Last rese... | Phone | Address | Insur... | Insurance provider |
|---|---|---|---|---|---|---|---|---|---|---|
| Balaklin Helen | Fem... | 44 years | 19.04.1978 | | 19.04.2021 | 20.05.2021 | | | | |
| Carlos Mateus Trainin... | Male | 75 years | 27.07.1947 | | 27.07.2018 | 18.05.2020 | +1 9875463215 | Mexica, T... | 8756 | Isuranto MX |
| DBA сухая кровь MM... | Male | 44 years | 07.07.1978 | A(II)+ | 13.05.2021 | 13.05.2021 | | | | |
| DBL Dry Blood Analys... | Male | 44 years | 27.01.1978 | | 27.01.2022 | 27.01.2022 | | | | 1 месяц мазку крови |
| Garry Stone русск и ... | Male | 32 years | 27.05.1990 | | 27.05.2020 | 21.04.2021 | +1 305 123 4567 | 900 Aven... | 987654 | Maxi-Ins |
| IP Mm1 v 3 LED inf +... | Male | 44 years | 12.07.1978 | | 12.08.2022 | 12.08.2022 | | | | |
| IP Пациент MM-3U3 ... | Male | 44 years | 05.05.1978 | A(II)+ | 10.08.2021 | 04.04.2022 | | | | |
| jOHM sMITH 2 | Fem... | 30 years | 16.08.1992 | | 16.08.2022 | 16.08.2022 | +1234156789 | JS2@GM... | | cfswfs dsfg sd sd s... |
| John Smith (Histology... | Male | 35 years | 21.11.1986 | A(II)- | 21.11.2016 | 16.03.2020 | +1 123456789 | USA, NY,... | 1258 | Fortune |
| John Smith Junior | Male | 67 years | 05.05.1955 | | 12.08.2022 | 12.08.2022 | | jsj@gmail... | | |
| LBA Подборка снимк... | Male | 35 years | 27.06.1987 | | 27.06.2017 | 02.03.2018 | м ыв | мывмв | вива... | авамивам вамвам в |
| Ningbo SX-A1 тестдр... | Male | 44 years | 17.09.1978 | | 17.09.2021 | 17.09.2021 | | | | |
| Ningbo SX-A1 тестдр... | Male | 44 years | 30.07.1978 | A(II)+ | 30.07.2021 | 30.07.2021 | +7495123456 | Адрес Ц... | Полис | Страх Комп |
| Penelope Gruzz (M1-... | Fem... | 50 years | 26.09.1972 | | 26.04.2021 | 26.04.2021 | | | | |
| U3 5.1 гистология | Male | 31 years | 01.04.1991 | | 01.04.2021 | 01.04.2021 | | | | |
| XCAM4K тест фото и... | Male | 31 years | 10.03.1991 | | 10.03.2021 | 22.03.2021 | | | | |
| XFCAM1080ph | Male | 31 years | 27.01.1991 | | 27.01.2021 | 27.01.2021 | | | | |

At the same time, we conduct a survey of the patient for the presence of complaints, collecting an anamnesis and clarifying objective data).

### 3.2.3 New patient/sample and card creation.

To add a card of a new patient in the window «DIANEL-MICRO - list of patients: ... full name ...» press the button and go to the «New Patient» window, where you need to specify all the requested patient data.




After entering the patient's data, confirm the performed actions by pressing the «OK» button.

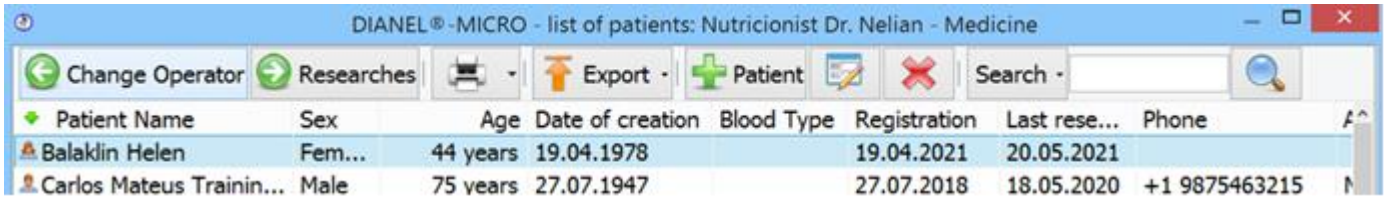
### 3.2.4 Patient list

After creating the card, this patient is automatically entered into the program database and displayed in the window «DIANEL-MICRO - list of patients: Operator» ... name ... «.

You can delete an unnecessary patient record with the button , after clicking LMB on the patient you want to delete. This function is applicable:

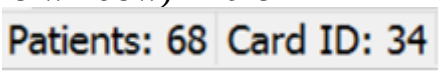
- while working in Trial mode.
- if the Administration function has not been activated in the current license. When the Administration function is activated, to delete the Patient card, you must enter the administrator password specified in the user card.

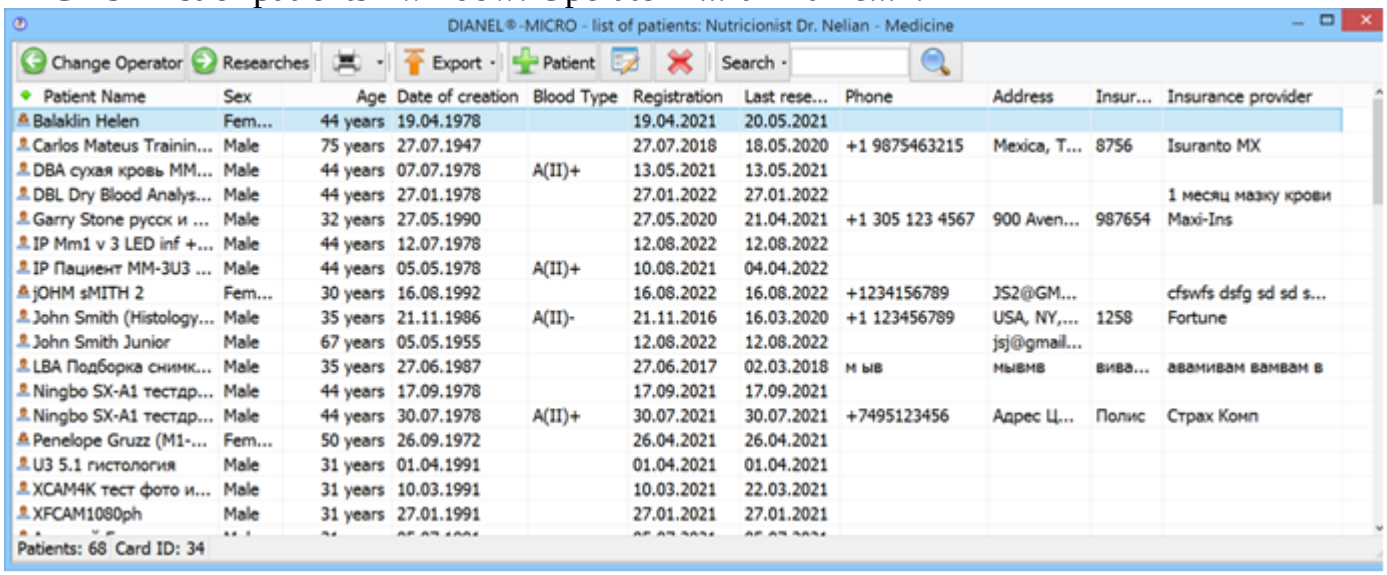
To confirm the performed actions, click the «OK» button.




When the «Administration» mode is activated, there is no button for deleting a patient's card on the panel. In order to control the work of the health facility, this function is available only to the Administrator.

To continue the work, select the patient with one left-click on the desired patient record and then click on the button

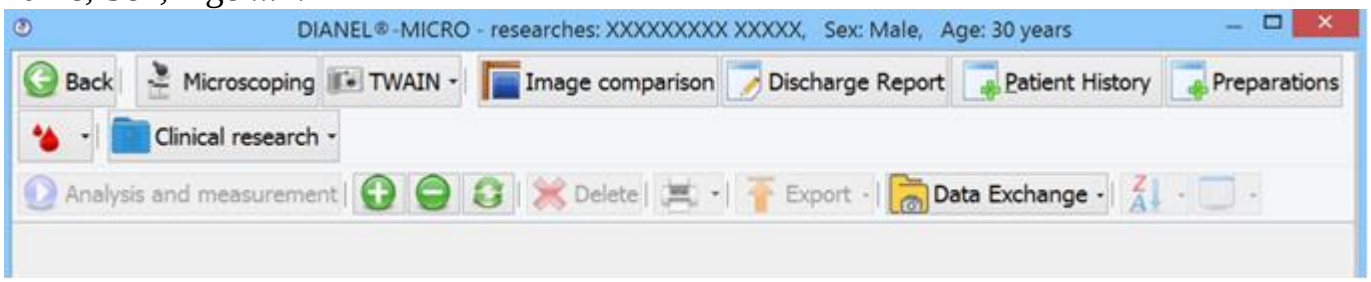
. The program maintains statistics of the created cards by displaying data in the «Status Bar» (lower part of the window) in the «DIANEL-MICRO - list of patients» window: Operator «...full name...». 

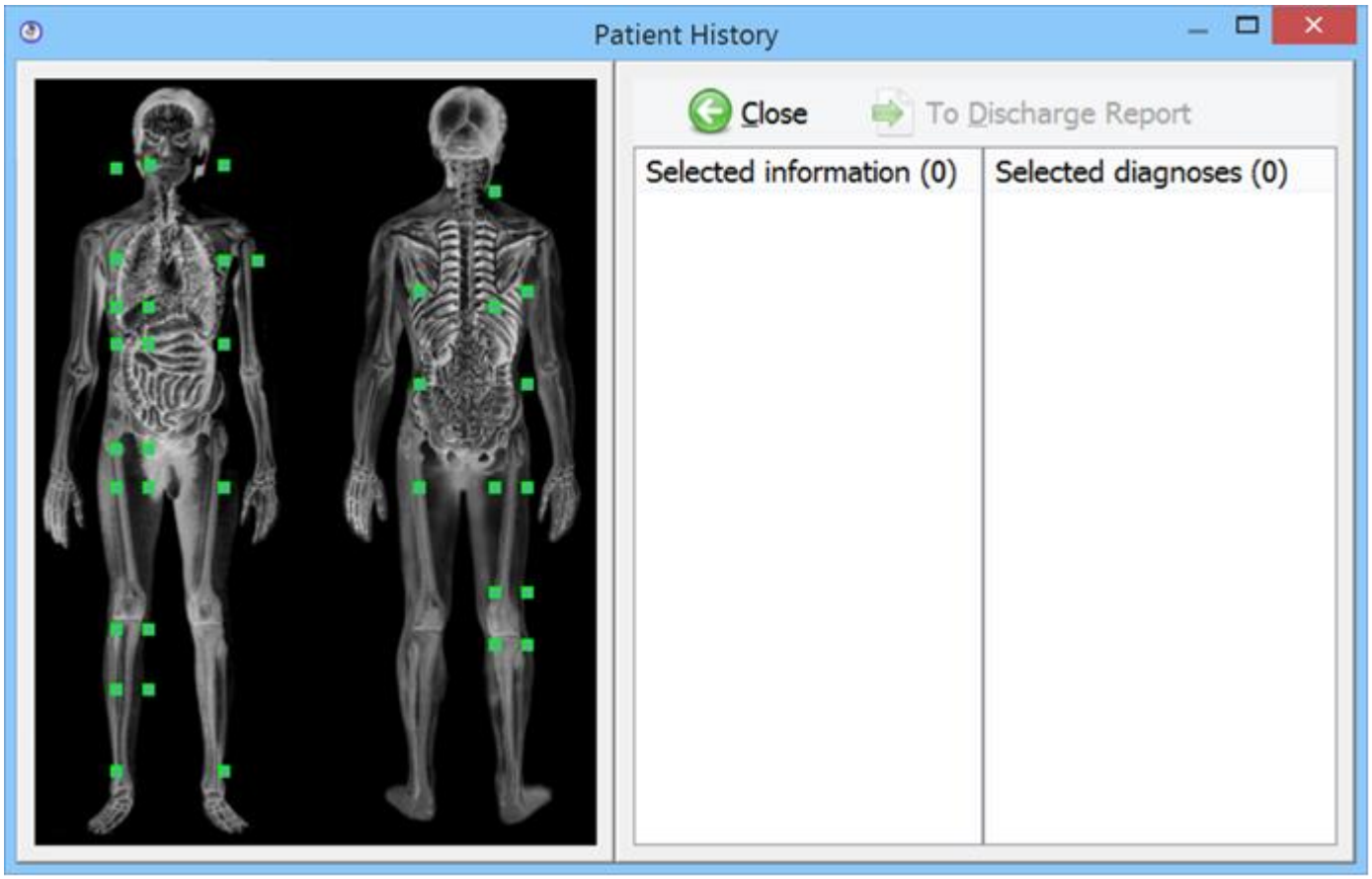




| Patient Name | Sex | Age | Date of creation | Blood Type | Registration | Last rese... | Phone | Address | Insur... | Insurance provider |
|---|---|---|---|---|---|---|---|---|---|---|
| Balaklin Helen | Fem... | 44 years | 19.04.1978 | | 19.04.2021 | 20.05.2021 | | | | |
| Carlos Mateus Trainin... | Male | 75 years | 27.07.1947 | | 27.07.2018 | 18.05.2020 | +1 9875463215 | Mexica, T... | 8756 | Isuranto MX |
| DBA сухая кровь MM... | Male | 44 years | 07.07.1978 | A(II)+ | 13.05.2021 | 13.05.2021 | | | | |
| DBL Dry Blood Analys... | Male | 44 years | 27.01.1978 | | 27.01.2022 | 27.01.2022 | | | | 1 месяц мазку крови |
| Garry Stone русск и ... | Male | 32 years | 27.05.1990 | | 27.05.2020 | 21.04.2021 | +1 305 123 4567 | 900 Aven... | 987654 | Maxi-Ins |
| IP Mm1 v 3 LED inf +... | Male | 44 years | 12.07.1978 | | 12.08.2022 | 12.08.2022 | | | | |
| IP Пациент MM-3U3 ... | Male | 44 years | 05.05.1978 | A(II)+ | 10.08.2021 | 04.04.2022 | | | | |
| jOHM sMITH 2 | Fem... | 30 years | 16.08.1992 | | 16.08.2022 | 16.08.2022 | +1234156789 | JS2@GM... | | cfswfs dsfg sd sd s... |
| John Smith (Histology... | Male | 35 years | 21.11.1986 | A(II)- | 21.11.2016 | 16.03.2020 | +1 123456789 | USA, NY,... | 1258 | Fortune |
| John Smith Junior | Male | 67 years | 05.05.1955 | | 12.08.2022 | 12.08.2022 | | jsj@gmail... | | |
| LBA Подборка снимк... | Male | 35 years | 27.06.1987 | | 27.06.2017 | 02.03.2018 | н ыв | нывнв | вива... | авамивам вамвам в |
| Ningbo SX-A1 тестдр... | Male | 44 years | 17.09.1978 | | 17.09.2021 | 17.09.2021 | | | | |
| Ningbo SX-A1 тестдр... | Male | 44 years | 30.07.1978 | A(II)+ | 30.07.2021 | 30.07.2021 | +7495123456 | Адрес Ц... | Полис | Страх Комп |
| Penelope Gruzz (M1-... | Fem... | 50 years | 26.09.1972 | | 26.04.2021 | 26.04.2021 | | | | |
| U3 5.1 гистология | Male | 31 years | 01.04.1991 | | 01.04.2021 | 01.04.2021 | | | | |
| XCAM4K тест фото и... | Male | 31 years | 10.03.1991 | | 10.03.2021 | 22.03.2021 | | | | |
| XFCAM1080ph | Male | 31 years | 27.01.1991 | | 27.01.2021 | 27.01.2021 | | | | |

### 3.2.5 Interactive history and epicrisis of the patient

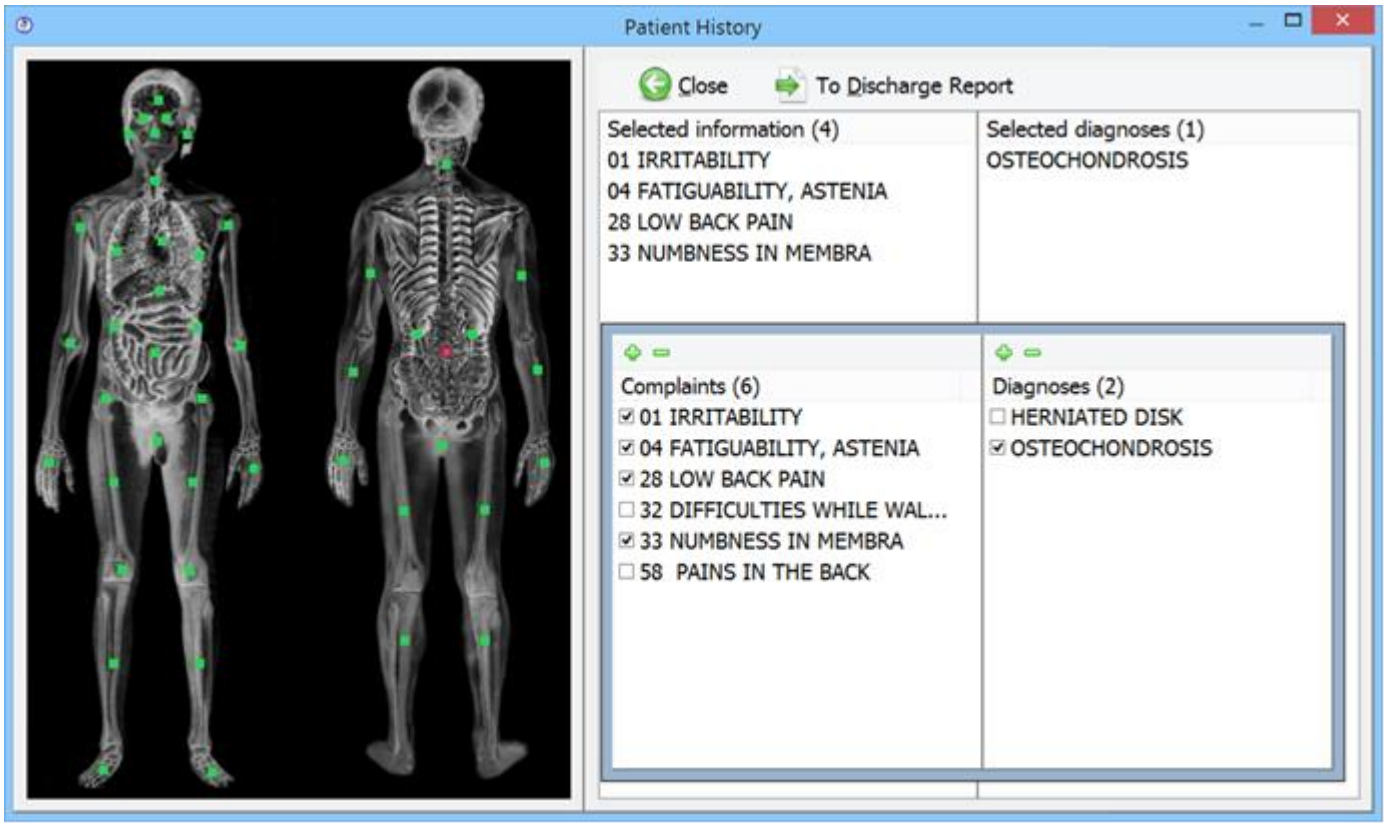
Before starting the examination, we fill in the patient's history by clicking on the «Patient Histori» button in the «DIANEL-MICRO – researches: XXXXXXXXX XXXXX, ... Full name, Sex, Age ...».



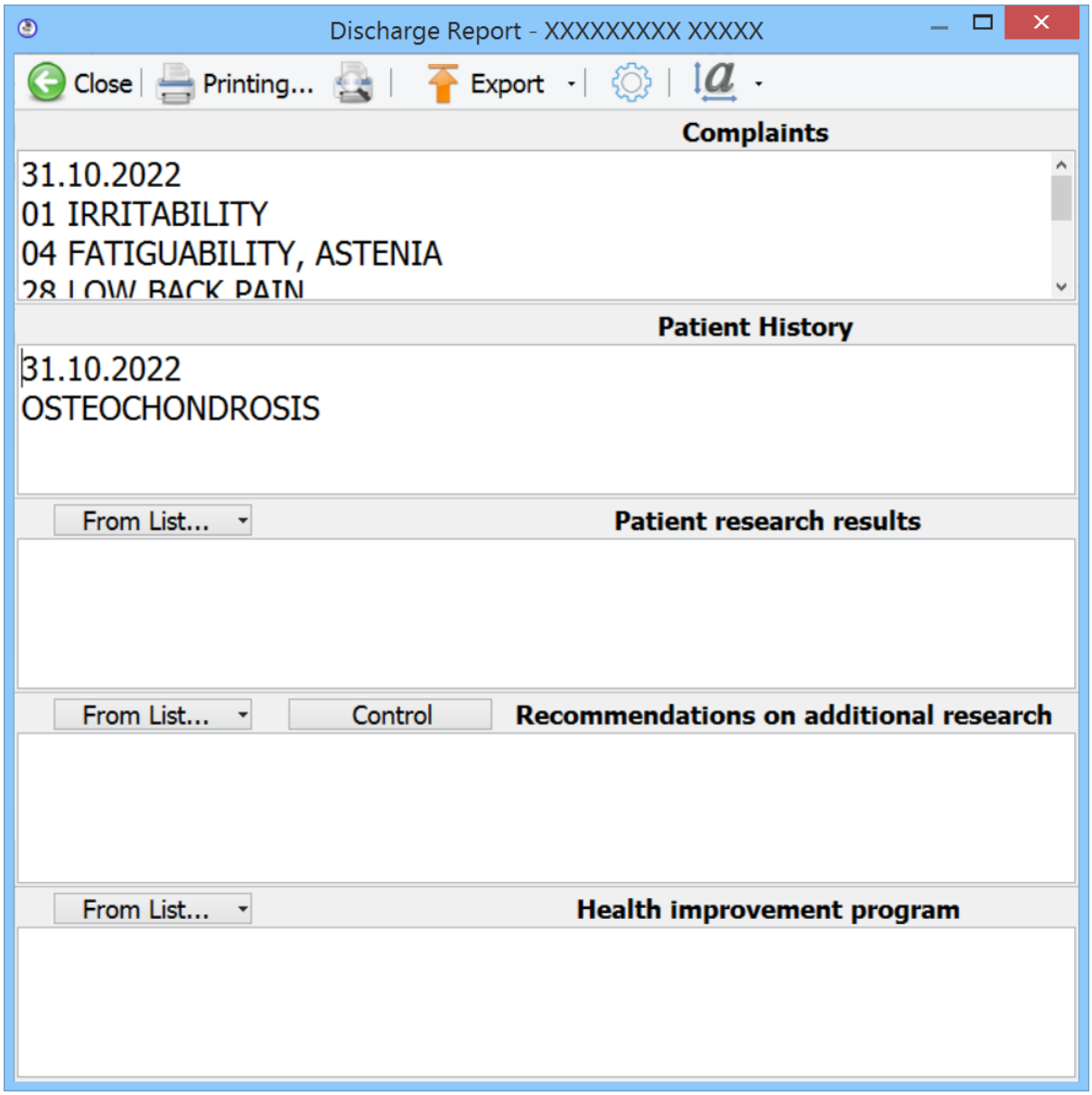



To do this, in the «Patient History» window that opens, click on the «green dots» on the person's image and select the required items that correspond to the patient's complaints and diagnoses. We go through all the indicated points, noting complaints and diagnoses for each indicated point.

When you select a point, the color changes from green to red and the option to select complaints and diagnoses opens. Corresponding complaints and diagnoses are marked with a «tick» and automatically displayed in the «Patient History» window.



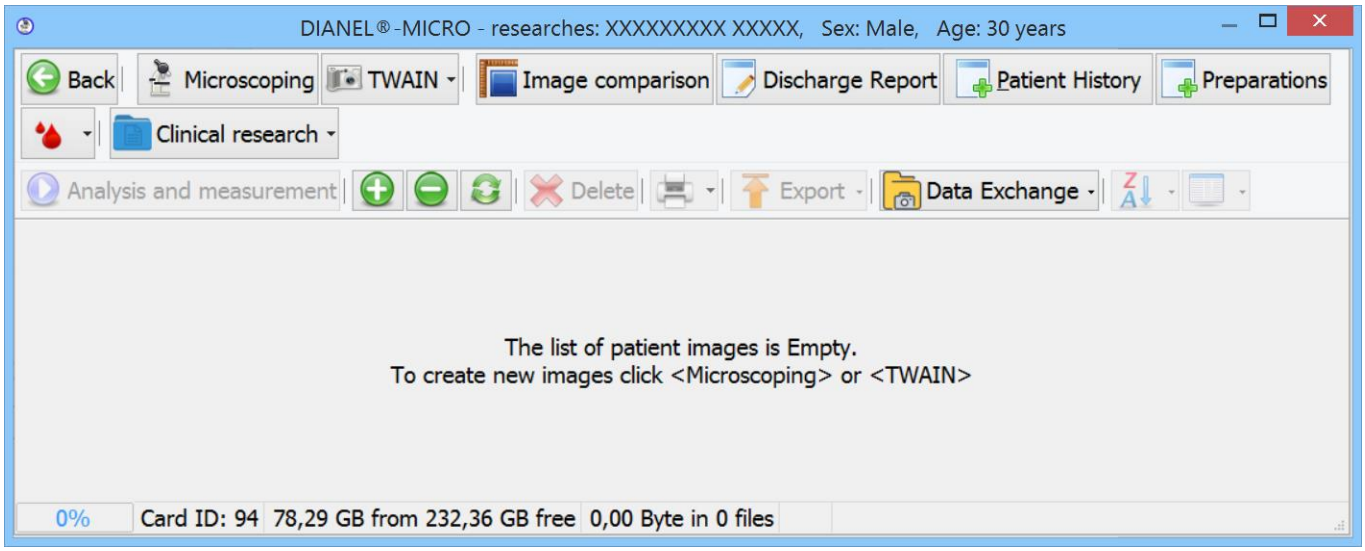

To save the completed anamnesis, click on the «To Discharge Report» button, after which the «Discharge Report» window opens and all previously completed information is saved in the patient's card. After the examination, the results will also be stored in the corresponding lines of the Discharge Report.



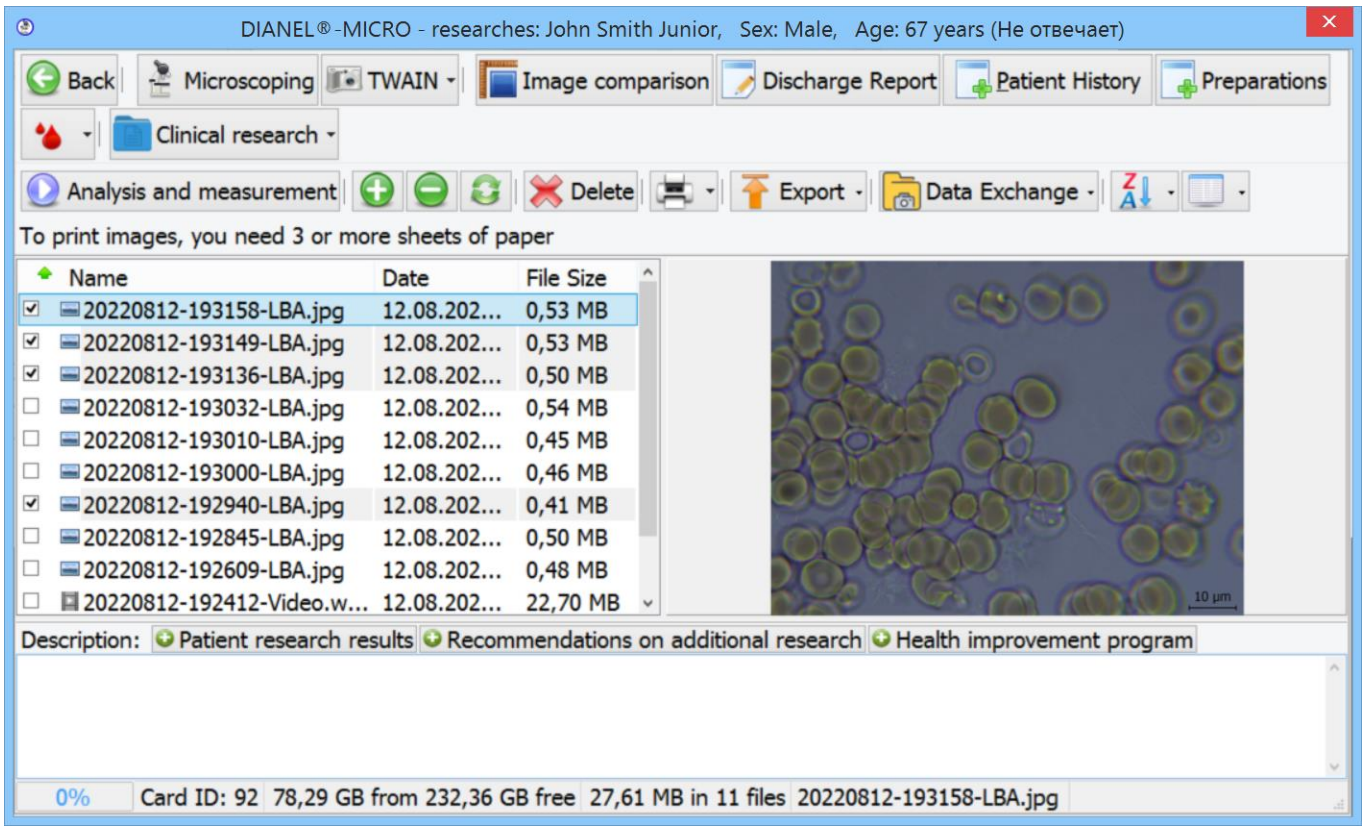

It is possible to add the necessary information to the Discharge Report. To do this, in the «Discharge Report -...» window, click LMB in the desired line (Complaints, Anamnesis, etc.) and after displaying the cursor, add information manually. To save the entered information, click the «Close» button, after which the information will be saved automatically in the Discharge Report.

### 3.2.6 Conducting sample evaluation (smear)

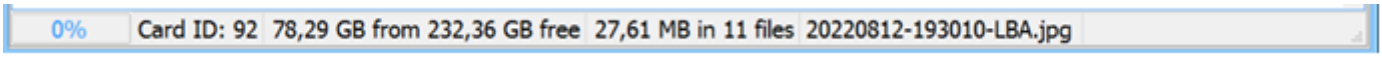
Preparation, evaluation and analysis of a smear, biological sample, histological or biopsy section, is carried out in accordance with approved methods and recommendations.
For these purposes, we offer wide functionality:
Click on the button to test a patient «Researches» in the window DIANEL-MICRO - list of patients» window: Operator «...full name...». We pass to the window «DIANEL-MICRO – researches: XXXXXXXXX XXXXX, ... Full name, Sex, Age ...», where it is possible to conduct the examination process. (3.2.5 Interactive history and epicrisis of the patient)
At the initial admission, the list of examinations is missing.




Upon re-admission, a complete list of the patient's examinations opens, which can be viewed by selecting the file in the table (on the left). In this case (on the right) an image of the selected file appears.



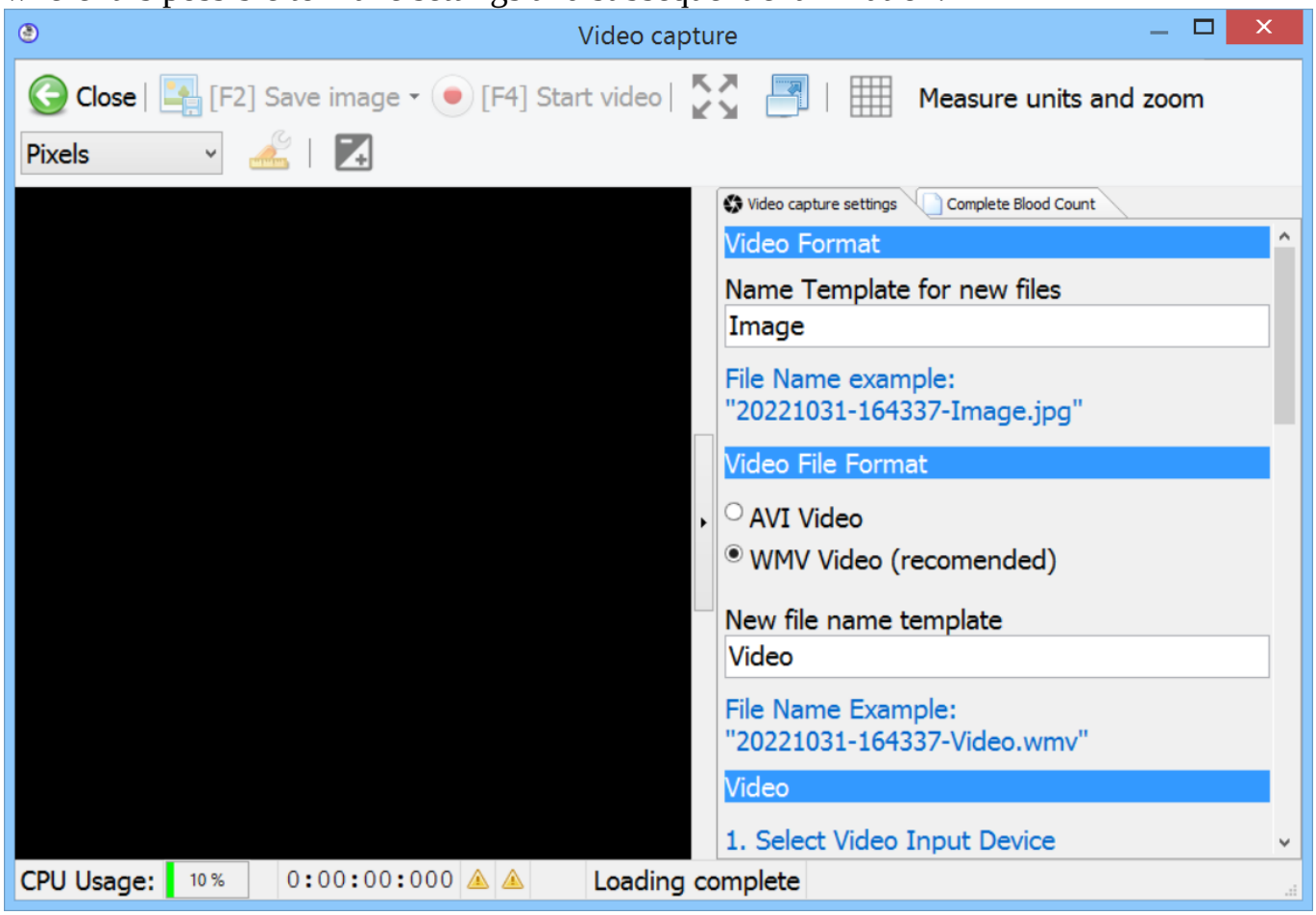

The «Notes» section displays the results of previously conducted surveys.
An additional function of the program is to maintain statistics of created cards, which are displayed in the «Status Bar» at the bottom of the window.




### 3.2.7 Videocapture and its settings

Further, to conduct the examination, we return to the window «DIANEL-MICRO - examinations: ... Name, Gender ..., Age ...» and press the button «Microscoping»

(provided that the camera supports the DirectShow protocol. If other protocols are supported, we use the TWAIN button), we get into the viewing window, where it is possible to make settings and subsequent examination.

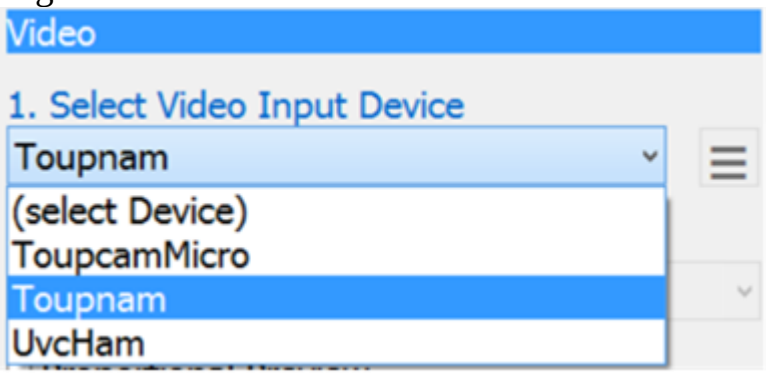



Click on the «Video Capture Settings» button in the «Video Capture» window, where we select the required parameters and data:

« Video format» - The operator, at his discretion, has the opportunity to choose a template for the name of images saved during research.

«Video file format» - Select the video format for storing and broadcasting video files, and the template for the name of the saved video files obtained during research. (it is recommended to choose the format - Video WMV);

«Video» - Select the video device to be connected. To do this, in the drop-down menu, select the name according to the installed camera.



- ToupcamMicro are applied by connecting the camera with the supplied USB cable to the USB 3.0 port of the computer.
- Toupnam applied when connected via LAN, WiFi
- UvcHam applied when connected via HDMI with USB

- choice of video format - it is recommended to choose the highest resolution from the proposed list

«Grid options» - specify the applied grid step, grid style and grid color, grid thickness;

«Audio» - to voice (comment) the created video files, select the device and sound source

If we see a black screen in the "Video Capture" view window that opens, then this circumstance implies:

- lack of connection of the camera to the PC;
- lack of installed driver for the camera;
- wrong choice of video input device «Video Capture».

- **Further setup requires connection of equipment (microscope and camera).**

#### 3.2.7.1 Digital camera specifications

For the correct operation of the Dianel-Micro program, cameras operating on the DirectShow, Twain protocols are recommended.

**Recommended List of Digital Microscope Cameras:**

ToupTek, Toupcam, Levenhuk, AmScope, Scopetek, Olympus, Meiji, Nikon, Zeiss, Microsight, Micro Vision, Osti, Naturoptic, Cofemo, Alternative Vision, Canon

#### 3.2.7.2 Digital Camera Installation

- To install a USB Digital Camera (ToupcamMicro), connect the device with an adapter (an adapter for connecting a camera and a microscope, which is selected in accordance with the selected camera). Mount the camera with the adapter on the microscope. Visually center the camera (the USB port should be on the opposite side of the microscope eyepieces) and fix it with fixing screws. Connect the connecting cable of the camera to the PC. USB 3.0 digital cameras can also be connected to USB 2.0 ports. In this case, the camera will operate in a compatible «USB 2.0 mode» with slightly reduced functionality. The camera is ready for software installation and further use.

⚠ **In 64-bit versions of Microsoft ® Windows ® operating systems, it is recommended to run the Dianel-MICRO program with administrator rights in order to be able to control OLYMPUS ® CAMEDIA ® and SP series digital cameras. OLYMPUS ® CAMEDIA ® and SP series cameras cannot be used from a guest account.**

- Installation principle of Digital Camera (Toupnam) is available upon request.
- Installation principle of Digital Camera (UVC HAM) is available upon reques.
- To install a Canon digital SLR camera, connect the camera to a PC, turn it on and turn the mode switch to position Av (automatic mode) or M (manual mode).
- The camera device drivers will be installed automatically. The camera is ready for software installation and further use.

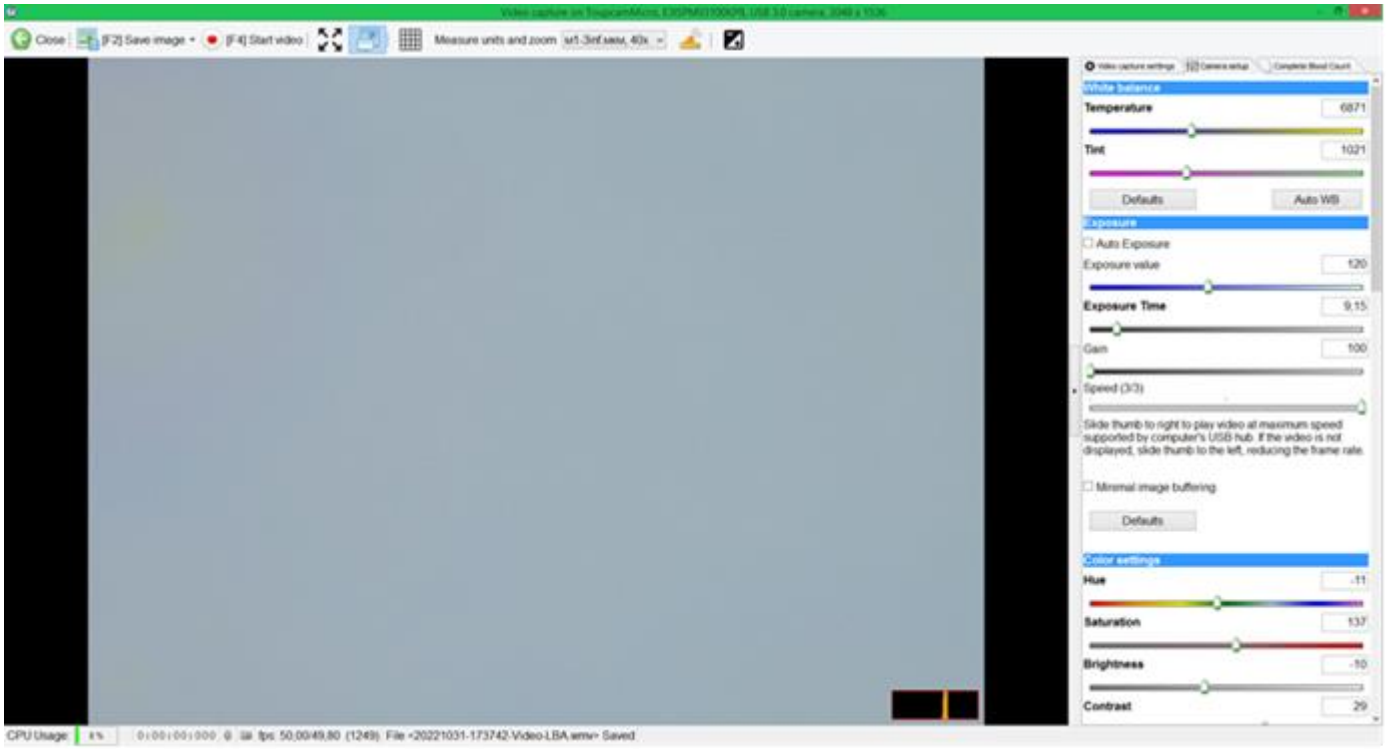
#### 3.2.7.3 Adding support for a new imaging device

To install support for a new imaging device in an already installed

Program, connect the device, wait for automatic device drivers or install them manually. The principle of installation is available on request. In the « Stopped» -> «Video Camera Settings»->«Video» -> «Select video Input device», select the desired device from the list. Next, configure the selected device.

#### 3.2.7.4 Digital Camera Settings

Digital camera settings are configured in the Video Capture window after selecting a video device. Camera settings made in the « Video Capture …» -> «Video Camera Settings» window, after selecting and connecting a video device.




The camera settings in the Video Capture window include the following options:

**«White Balance»** - adjusts the correct color reproduction of the image to obtain balanced color images.

**«Black balance»** - adjusting the correct color reproduction of the image in the absence of light.

**«Color settings»** - adjustment of spectral characteristics to obtain information about the real color of the micro-object and then determine its state.

**«Exposure»** - a parameter for determining the level of illumination of a micro-object during the study.

**«Other parameters»** - setting the size and quality of the resulting image of micro-objects.

**«Information»** - general characteristics of the video camera used.

Additional (advanced) camera settings can be performed in the «Videocapture» -> «Videocapture settings» -> «Video» window, in the «Select video device» parameters, by clicking the button . Select video devices from the proposed list. Next, on the «Camera Settings» tab or , the Video settings window opens.

When you select the lens used, the created photographic images are automatically assigned the appropriate scale based on the selected calibration, and a control segment is created on the resulting image to assess the scale of the image and identify micro-objects.

### 3.2.7.5 White balance

It is recommended to set the «White Balance» color correction in automatic mode using the «AutoWB» button or set the «Color Temperature» and «Hue» on your own, using the «Camera Settings» tab in the «VideoCapture» window.

The White Balance setting options differ depending on the microscope model and camera, so it is recommended to use the automatic setting mode.

### 3.2.7.6 «Black balance»

The Black Balance adjustment is performed to ensure that the color of the image is correct when:

- using the camera for the first time or after a long period of non-use
- a strong change in ambient temperature

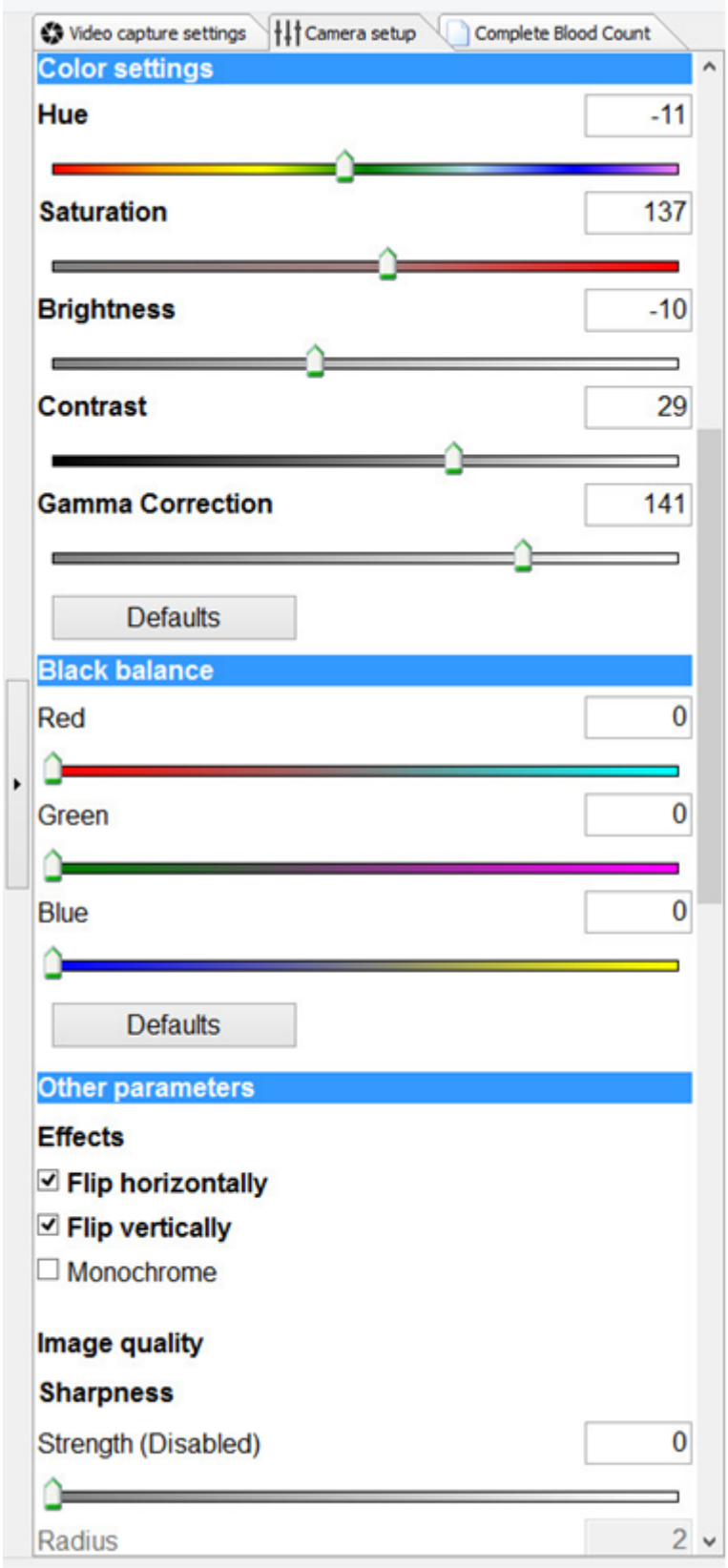
The operator sets the required parameters at his own discretion.

### 3.2.7.7 Exposure

For correct image acquisition, set the parameters of the camera settings, in the «Exposure» section, on the «Camera Settup» tab. It is recommended to perform automatic adjustment by checking the box in the Auto exposure line or set the necessary parameters yourself.

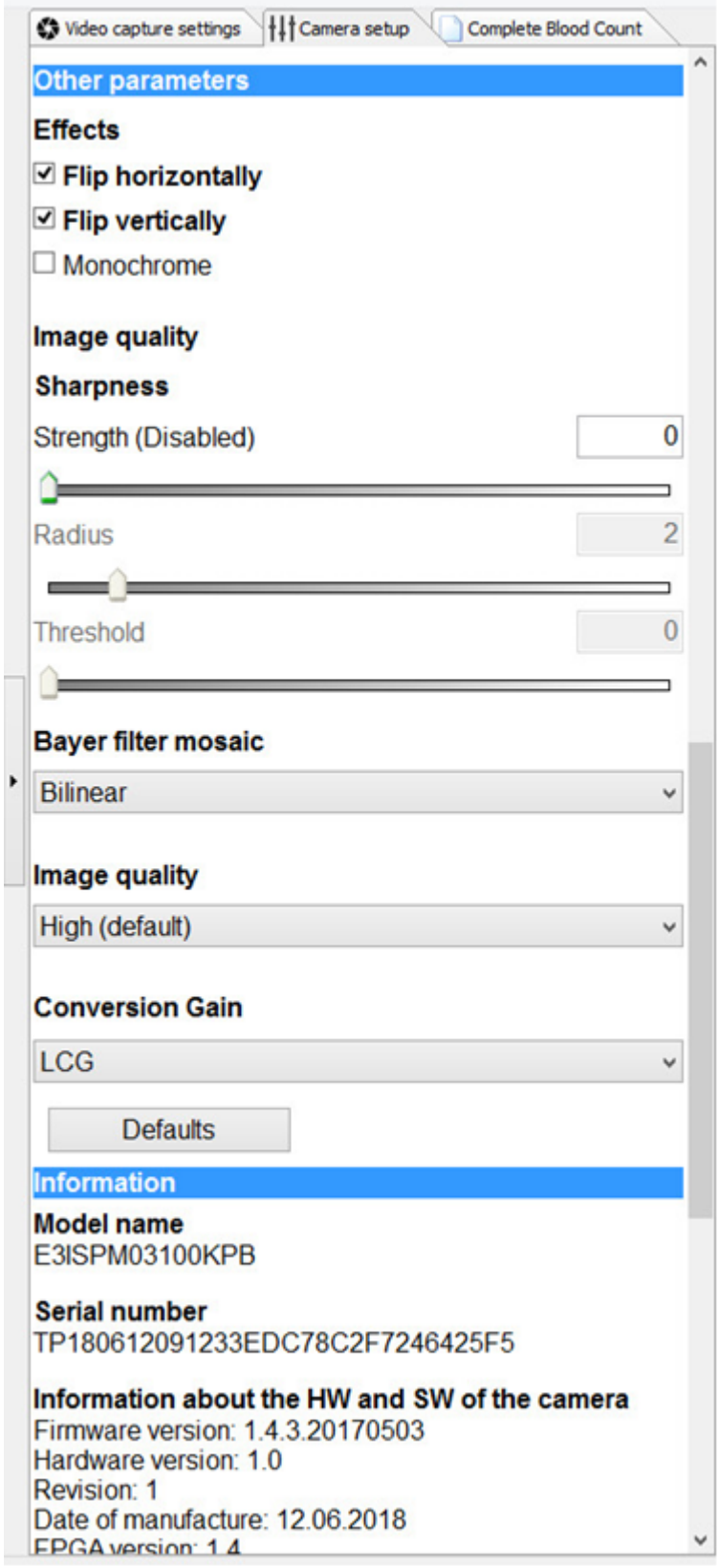
### 3.2.7.8 Color setting

For correct image acquisition, set the parameters of the camera settings, in the “Color Settings” section, on the «Camera Settup» tab. It is recommended to adjust by setting the «arrow» in the center of the scale.




### 3.2.7.9 Other parameters

Other (Advanced) image settings are set on the «Camera Setup» tab, in the «Other parameters» item. Correction of horizontal/vertical field of view shift, sharpness, image quality, etc. are configured at the discretion of the Operator in the «Effects» item. To automatically (program) configure the parameters, click on the «Default» button.




### 3.2.7.10 Sample examinations

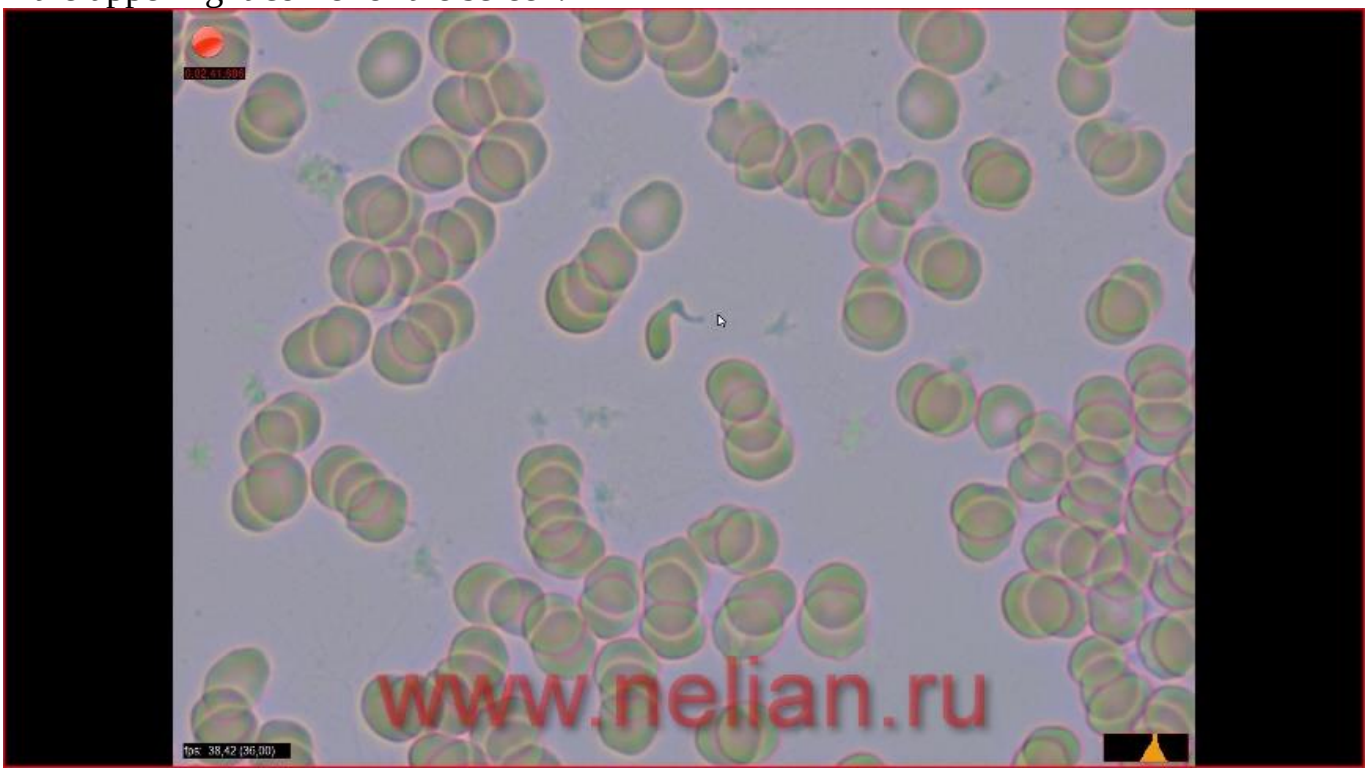
After making the necessary settings, in the «VideoCapture» window, samples, patient samples are examined using a microscope and a digital camera. In the «VideoCapture» window, an enlarged image, in real time, of the studied materials is broadcast. It is possible to record video and images, save files in the formats selected during the settings.

The files are stored in the Software Database. An example of the result of the joint work of a microscope, a digital camera and software:

### 3.2.7.11 Additional functionality of the Video Capture window

In the «Video Capture» window, the received samples are analyzed in real time, with the possibility of taking photo and video shooting and saving the examination results.

The button “Start video” (F4) records the test sample, as evidenced by the red icon located in the upper right corner of the screen.

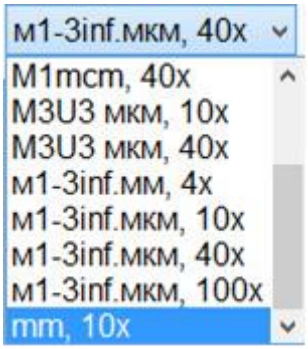


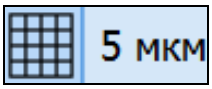

To save the video file of the study, click on the «Stop video» button.

By pressing the «Save image» button (F2), the moment of the image is captured - a photo. The file is saved by default in the Software folder. It is possible to save the image in a folder at the discretion of the Operator, to do this, click on the arrow located on the «Save image» button and select the «Save as ...» item. After that, the explorer will open, where you need to specify the folder to save the file.

Button performs window scaling (full screen mode/window mode). In the Software, when working in full screen mode, when you hover the cursor over the top edge of the window, a toolbar pops up;

It is possible to change the parameters of the units of measurement using the button «Units of measurement and magnification», selected from the list previously saved during calibration.




Push button 

«Show Grid» displays a previously configured grid to visually count the number of micro-objects in a limited area. To do this, select the units of measurement previously entered during calibration by clicking the button. By default, the units are set to screen pixels. If there is no calibration, in the patient card «DIANEL-MICRO - examinations» ... Full name, Gender, Age ... «, select the image on which you want to take measurements and go to the button» Evaluation and measurement «. In the next step, the Software will prompt you to calibrate for the magnification in which the picture was taken. Confirm further calibration

- **If the calibration is refused, it is not possible to perform measurements!**

### 3.2.7.12 Calibrate the microscope measuring system

Each optical system must be calibrated. Calibration is performed using a calibration standard - Object-micrometer (not included in the delivery set), which is designed to measure the linear dimensions of objects and perform other calculations based on the measurement and processing of linear dimensions in the field of view of the microscope in transmitted light, dark field, phase contrast , luminescence, polarization, in reflected light and other types of research on a microscope.

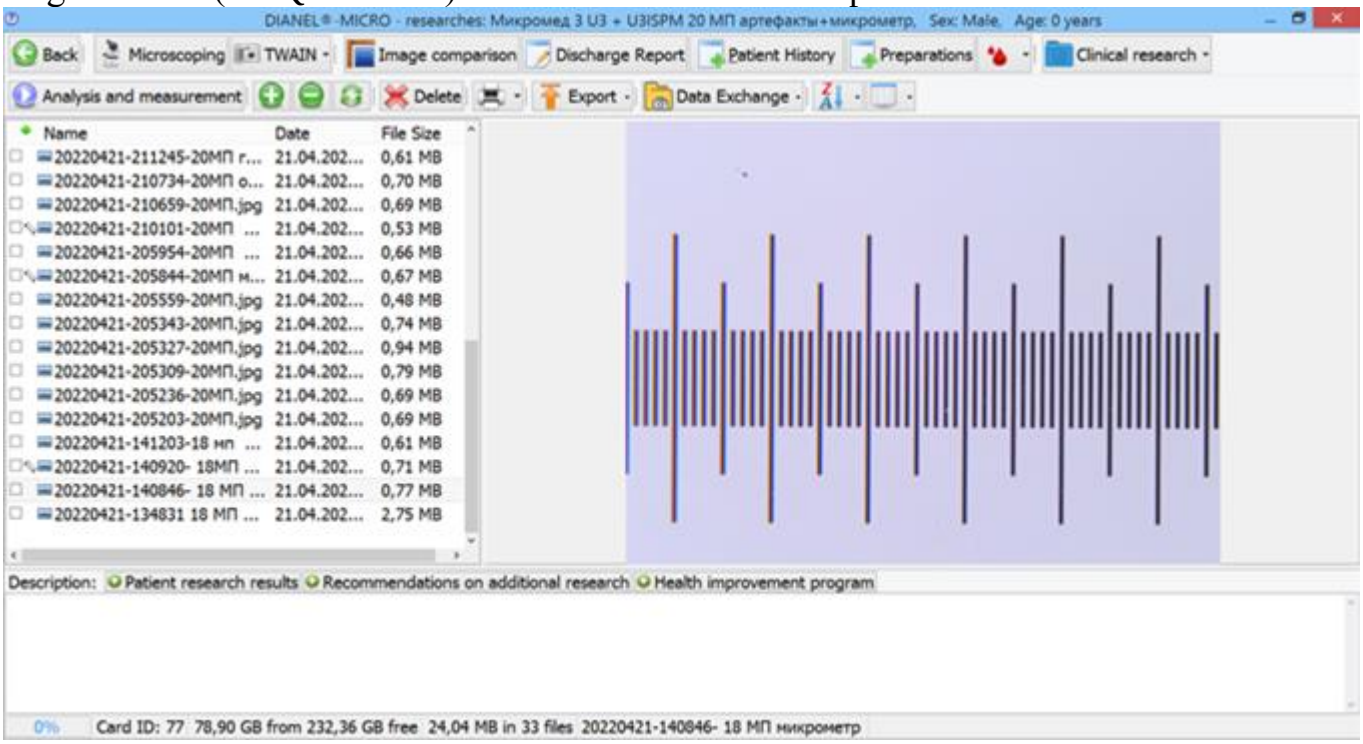
To perform calibration:

- it is recommended to create a patient card with the name «Calibration ... x» (indicate the resolution of the microscope objective used).
- display an image from a digital camera on the PC monitor screen, to do this, go to the "Video Capture"-> "Video Capture Settings"-> "Video" window and specify the camera

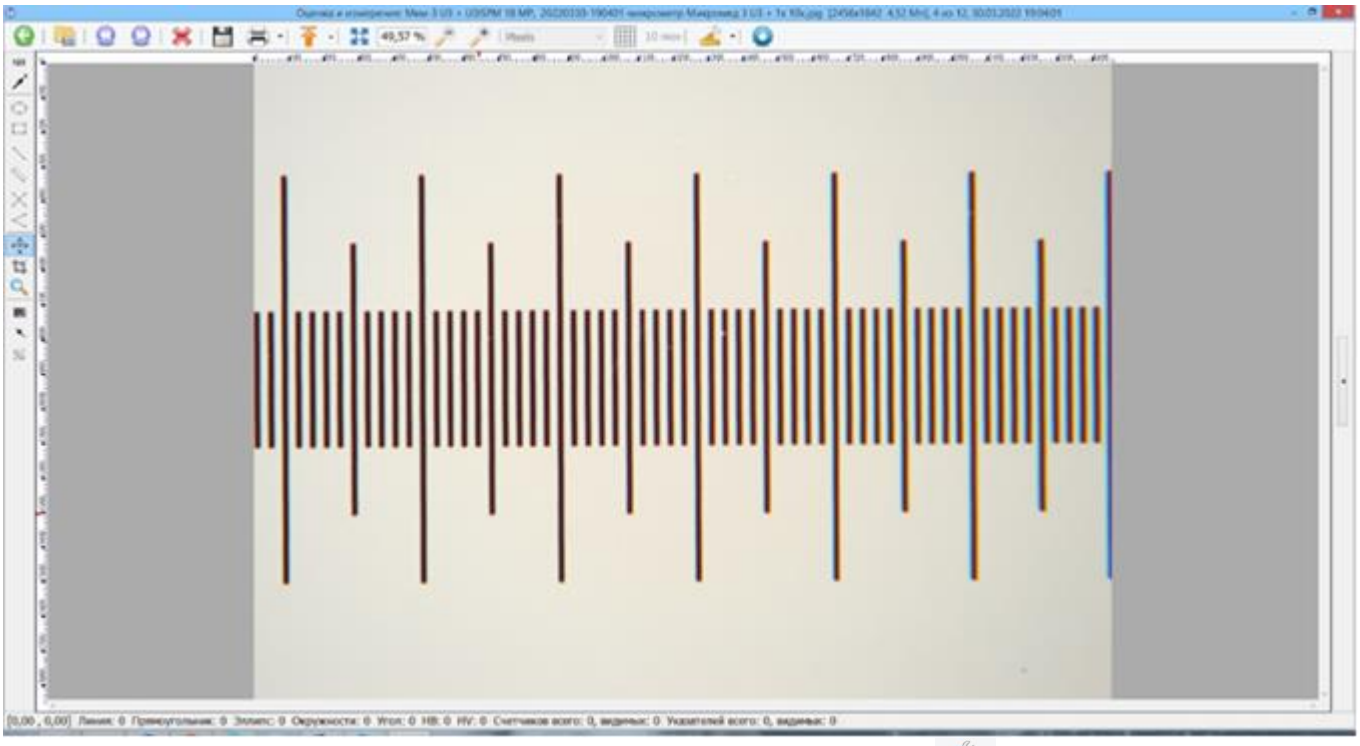
used. Set the object-micrometer on the microscope object table, focus on the scale of the object-micrometer using the microscope adjustments, center the Object-Micrometer scale in the field of view by moving the object table and take the picture by pressing the “Save image” button (F2-Quick save) in the window “ Videocapture. Each optical system must be calibrated. Calibration is performed using a calibration standard - Object-micrometer (not included in the delivery set), which is designed to measure the linear dimensions of objects and perform other calculations based on the measurement and processing of linear dimensions in the field of view of the microscope in transmitted light, dark field, phase contrast , luminescence, polarization, in reflected light and other types of research on a microscope.

To perform calibration:

- it is recommended to create a patient card with the name «Calibration ... x» (indicate the resolution of the microscope objective used).
- display an image from a digital camera on the PC monitor screen, to do this, go to the “VideoCapture”-> “VideoCapture Settings”-> “Video” window and specify the camera used. Set the object-micrometer on the microscope object table, focus on the scale of the object-micrometer using the microscope adjustments, center the Object-Micrometer scale in the field of view by moving the object table and take the picture by pressing the “Save image” button (F2-Quick save) in the window “ Video capture:

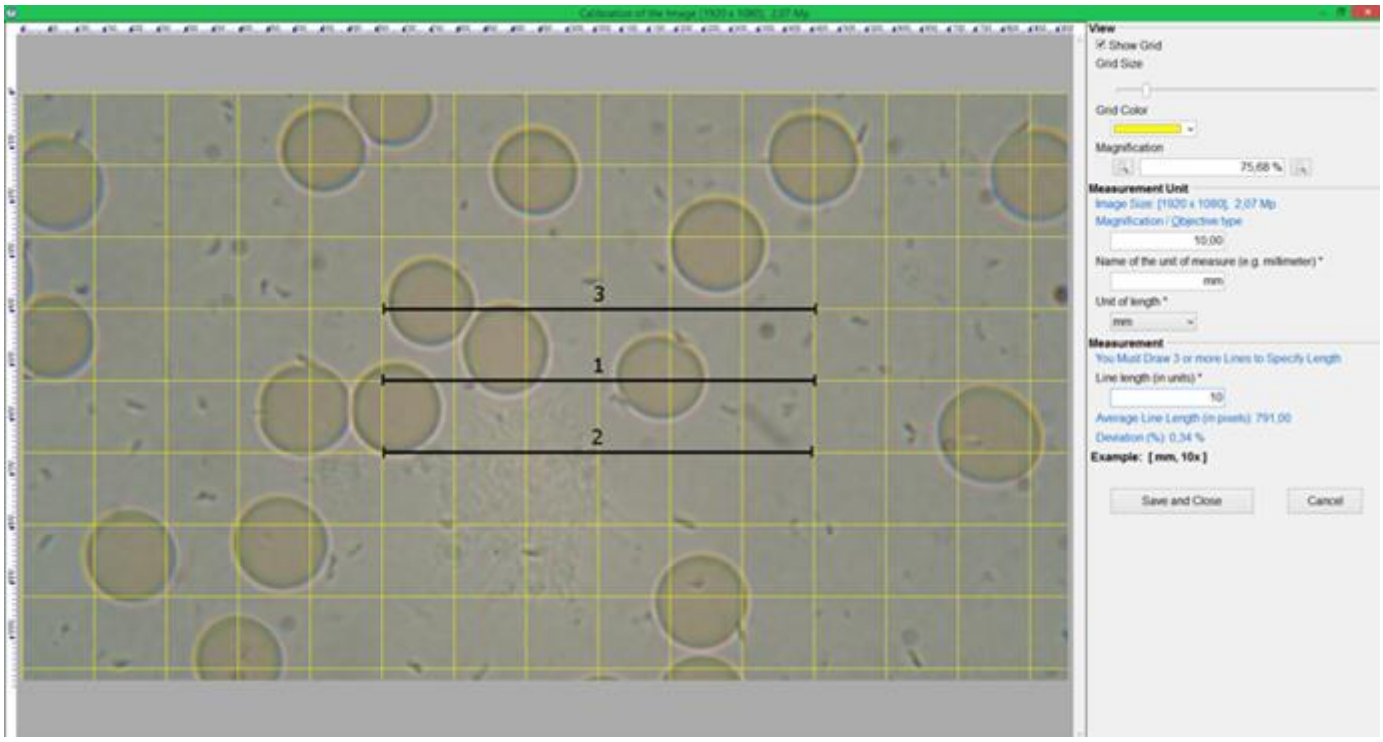



We select a file with the desired magnification and go to the button «Evaluation and measurement» -> «Evaluation and measurements: ... Calibration…x»



To start the calibration process, press the button (Calibration) . We automatically go to the «Image Calibration» window, on the right side of the window we perform the required settings:

- Grid adjustment (size, color and display scale) - are adjusted at the discretion of the Operator;
- Units of measurement - indicate the magnification according to the type of lens (For example: 40.00 or 100.00),
- Assignment of the unit of measure - set depending on the model of the used micrometer object and at the discretion of the Operator;
- Units of measurement of length - are set depending on the graduation of the used object-micrometer (For example: a scale with a length of 1 mm with a number of divisions of 100 pieces has a division value of 0.01 mm, which corresponds to 10 microns. Set the unit of measurement - microns);
- Measurements - in the «Image Calibration» window, draw at least 3 straight, approximately equal in length, horizontal lines. To do this, specify the beginning and then the end of the line by clicking the mouse and enter the value of the line length in real units, recalculating them according to the applied micrometer object (see calculation above).

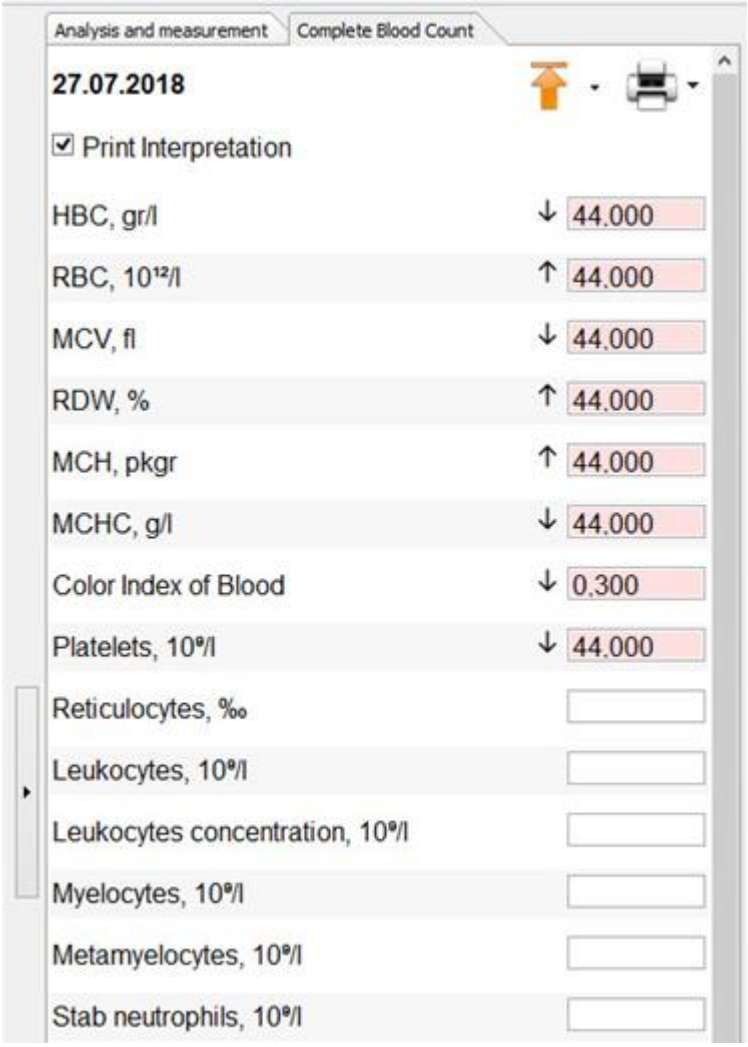



After making the settings, click the «Save and Close» button
The Software will prompt you to select the magnification of the image. Specify the lens magnification at which the picture was taken and click «OK».
The Software will save and then apply the performed calibration.

- **Repeat the calibration process for each magnification applied to the lens. Calibration will be automatically applied when you select the units of measurement, and the results will be automatically recalculated accordingly.**
- **The OPERATION MANUAL for the Measuring Instrument Object-Micrometer can be found on the manufacturer's website in the section «Optical microscopes: ... -> Accessories for Microscopes Digital, Optical, Medical, Laboratory, Metallographic, Stereoscopic, etc.»**

### 3.2.8 Complete blood count

The Software has the ability to enter data on the ongoing blood test. To do this, in the window «DIANEL-MICRO - examinations» ... Full name, Gender, Age ... «, by pressing the button . A drop-down menu opens.
We pass along the line «Enter data ...». The Software offers to set the date of analyzes and confirm with the «OK» button. Next, the «Clinical blood test» tab opens, where the available analysis data entered with the possibility of saving and printing.




Further, the entered information will be displayed in the «Video capture» window, the «Complete blood count» tab. This mode is convenient for the operator when re-admission of the patient.

When passing through the line «List ...», after pressing the button , A window with previously performed and saved analyzes will open.

#### 3.2.8.1 Status bar

The status bar at the bottom of the Video Capture window displays:

• «CPU load» - the percentage component of the load of the central processor of the operator's computer;

• Video recording time;

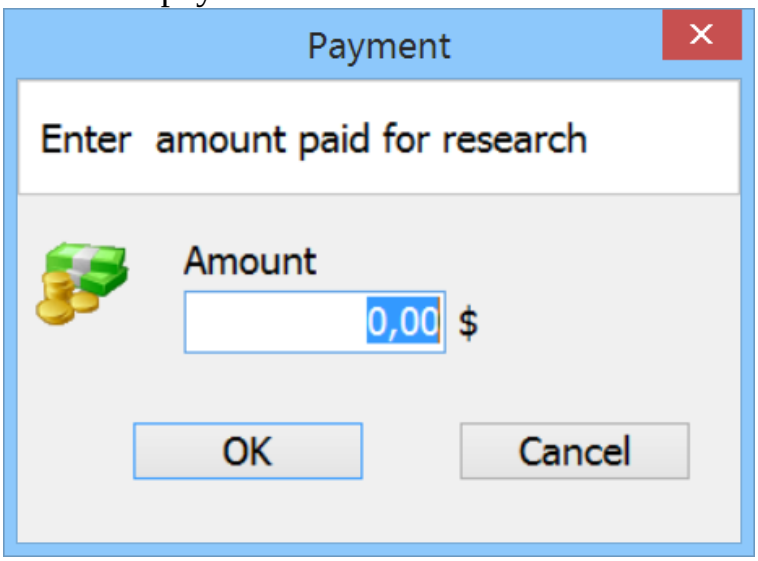
• Display of frames per second in real time.

### 3.2.9 TWAIN function

The “TWAIN” function, by clicking on the corresponding button, is used to work with a camera that supports the Twain protocol, as well as with external devices, to view and add analyzes and conclusions to the patient folder. In the window «DIANEL-MICRO - surveys» ... Name, Gender, Age... « press the button «TWAIN» and proceed to the selection of the camera used by highlighting it and pressing the « Select» button

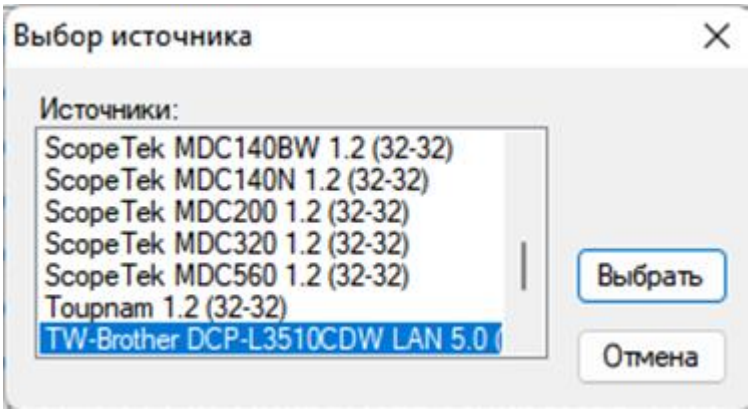
Next, you will be able to scan documents provided by the patient

Next, the «Payment» field opens with the possibility of entering the amount for the reception and confirming the action with the «OK» button. For free admission, press «OK» without entering the amount of payment or close the window «X».




After that, the «TWAIN» window opens automatically, where the settings are set in relation to the connected operator's scanner (exposure parameters, image color settings, etc.), regardless of the model and manufacturer of the scanner. The setting is done once. The document is saved with the name format previously specified in the settings.

With the previously entered scanner parameters, after pressing the «TWAIN» button, select the desired scanner from the «Select data source» drop-down menu.

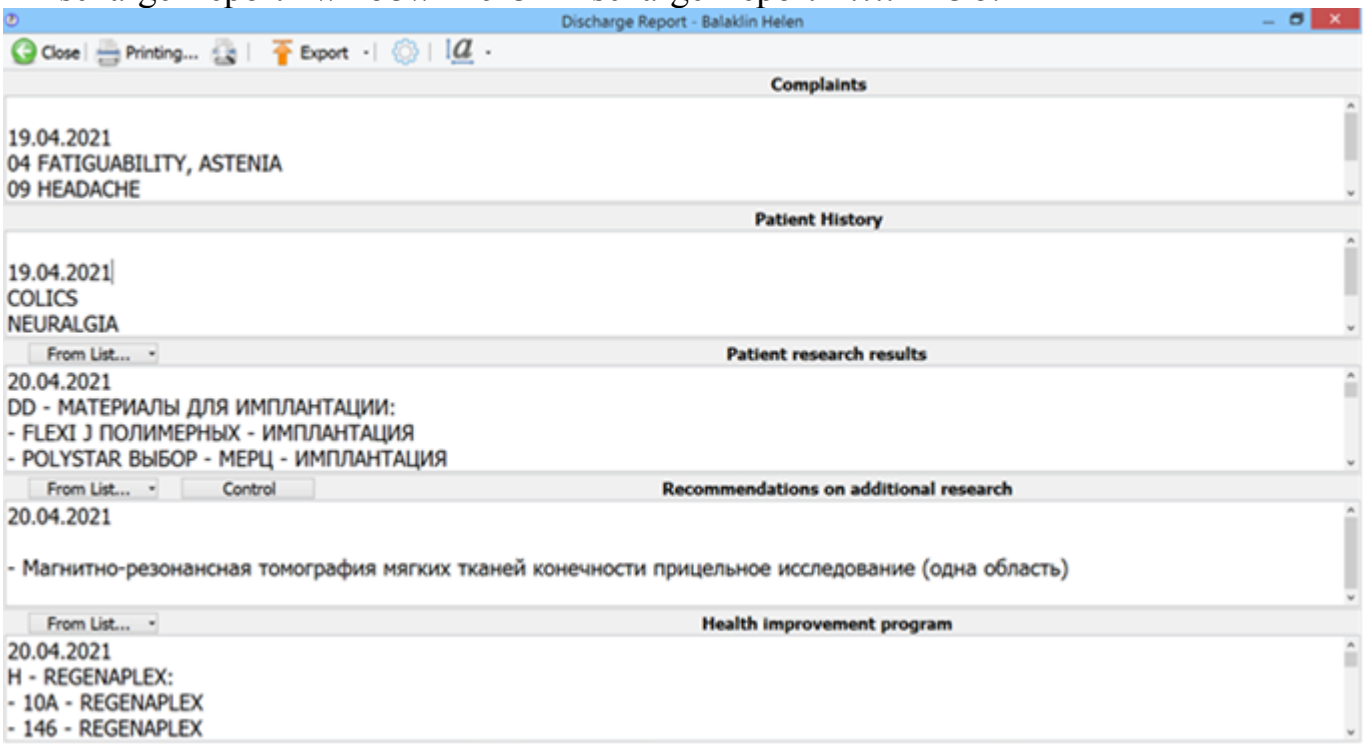


To confirm, press the «Select» button. After that, using the «TWAIN» button, select «Get Image» in the drop-down menu and then the scanned document automatically goes to the «Clinical Examinations» folder of the patient.

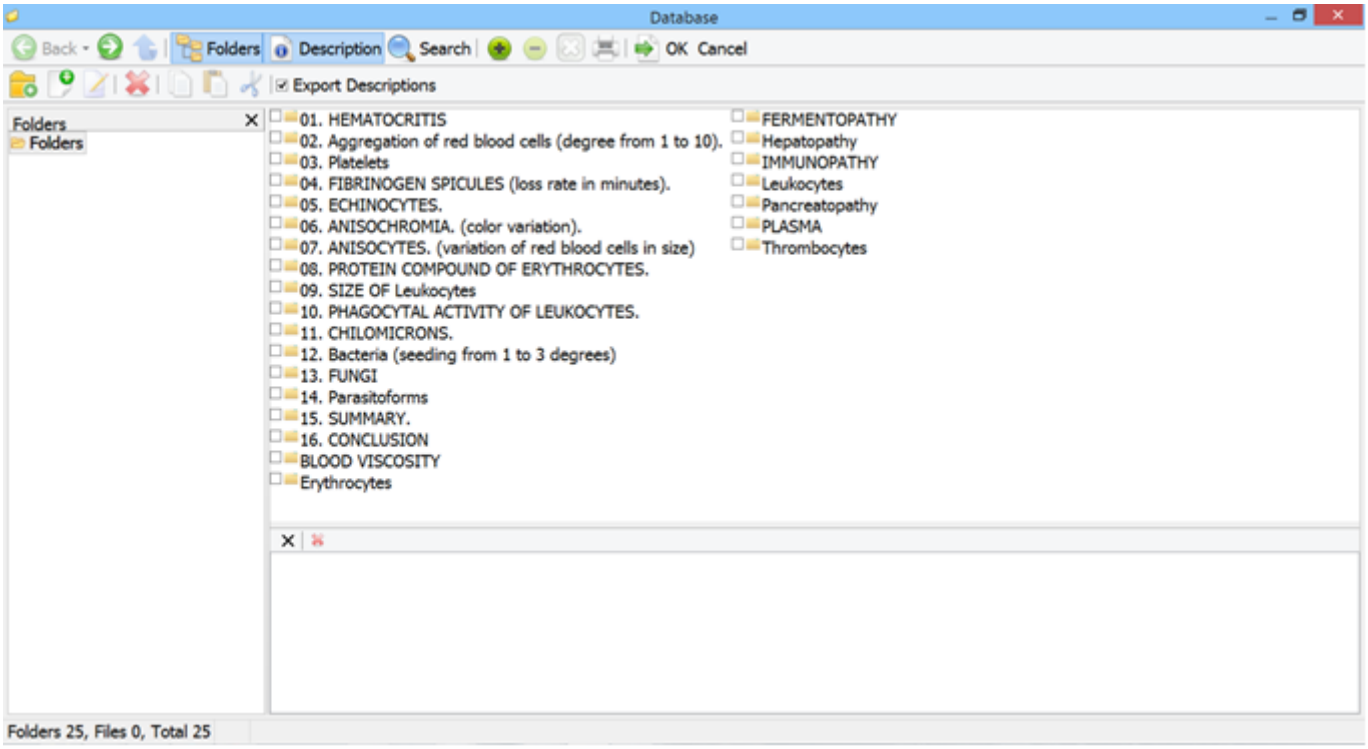
### 3.2.10 Survey results

To add the results of surveys, press the button

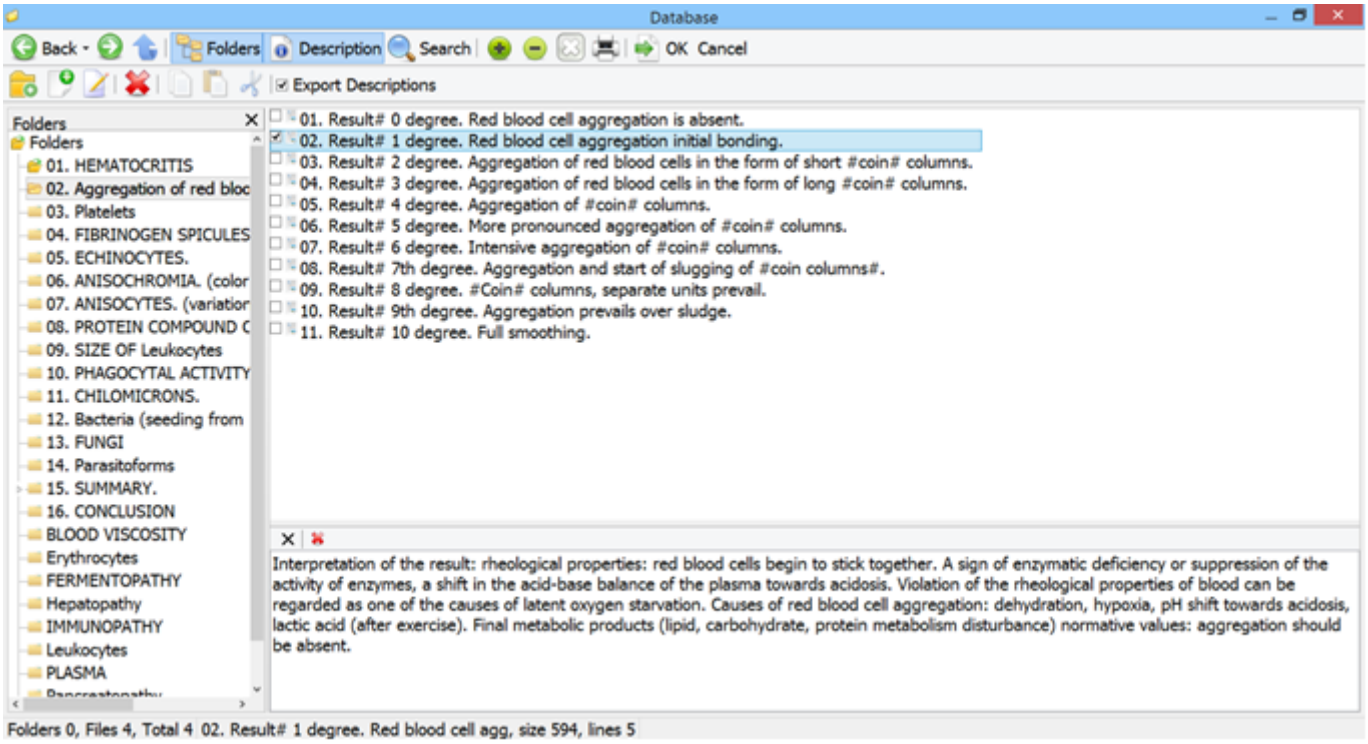
in the «Discharge Report» window in the «Discharge Report - ….» field.




The «Database» window opens, where we mark the conducted studies with a «tick».

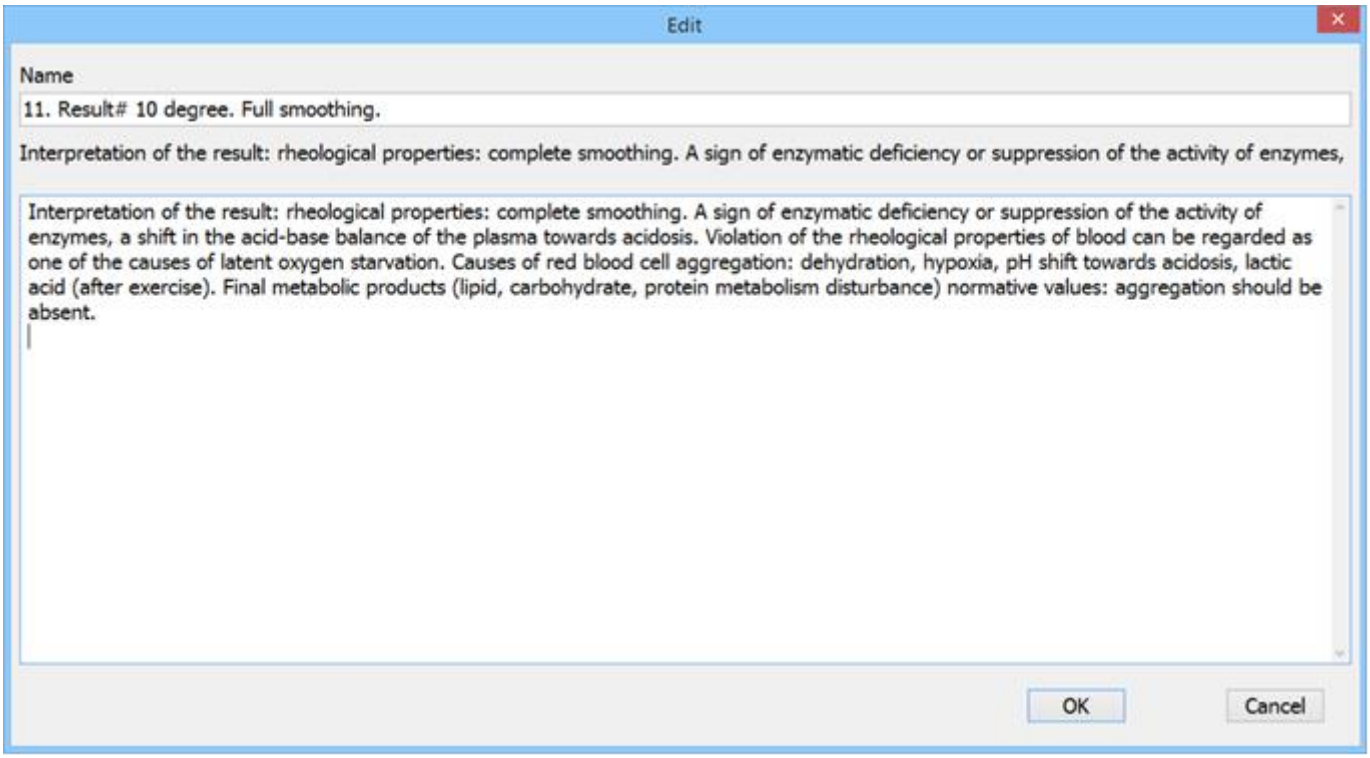


After selecting research results by double-clicking on the selected object (for example, chylomicrons or fungi) in the «Database» window, an extended functionality of the window opens.



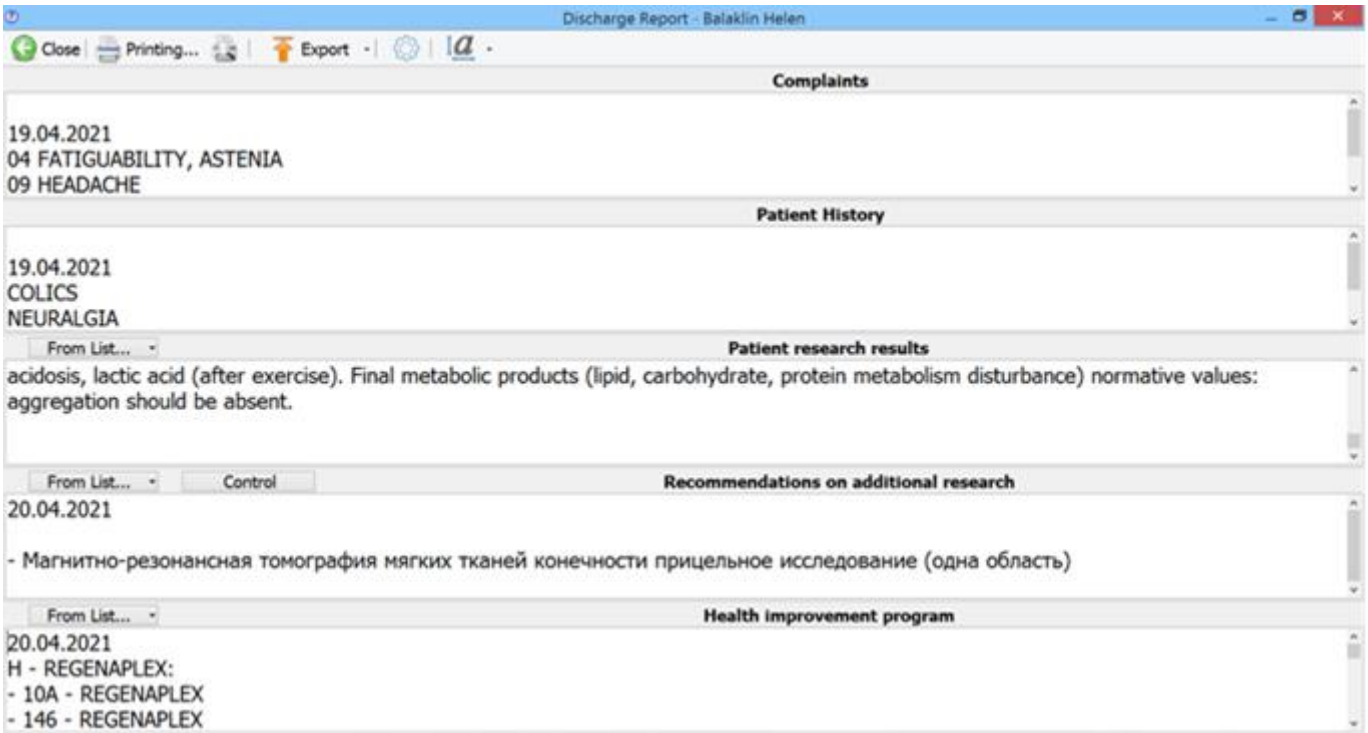

By double-clicking in the «Folders» field on the selected object, options for the results of the study are opened, corresponding to the ongoing studies, from which the results are marked with a «tick».

In the lower right field of the «Database» window, an interpretation of the result of the study will automatically appear, which can be corrected. Also, the results interpretation column can be opened by pressing the «Description» button. To make adjustments to the interpretation of the results, double-click in the «Edit» column on the previously selected result and in the window that opens, make the necessary adjustment and confirm by pressing the «OK» button.

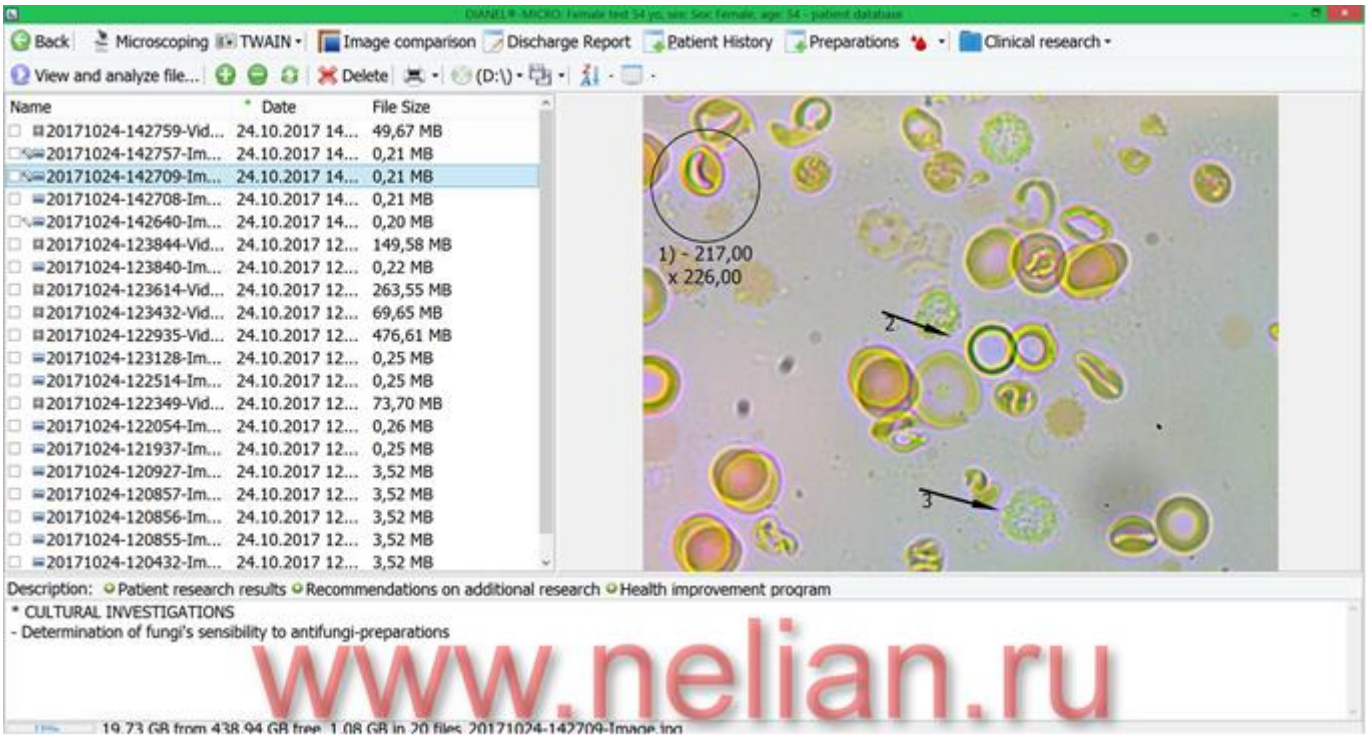



To add the results of the study to the epicrisis, click the button

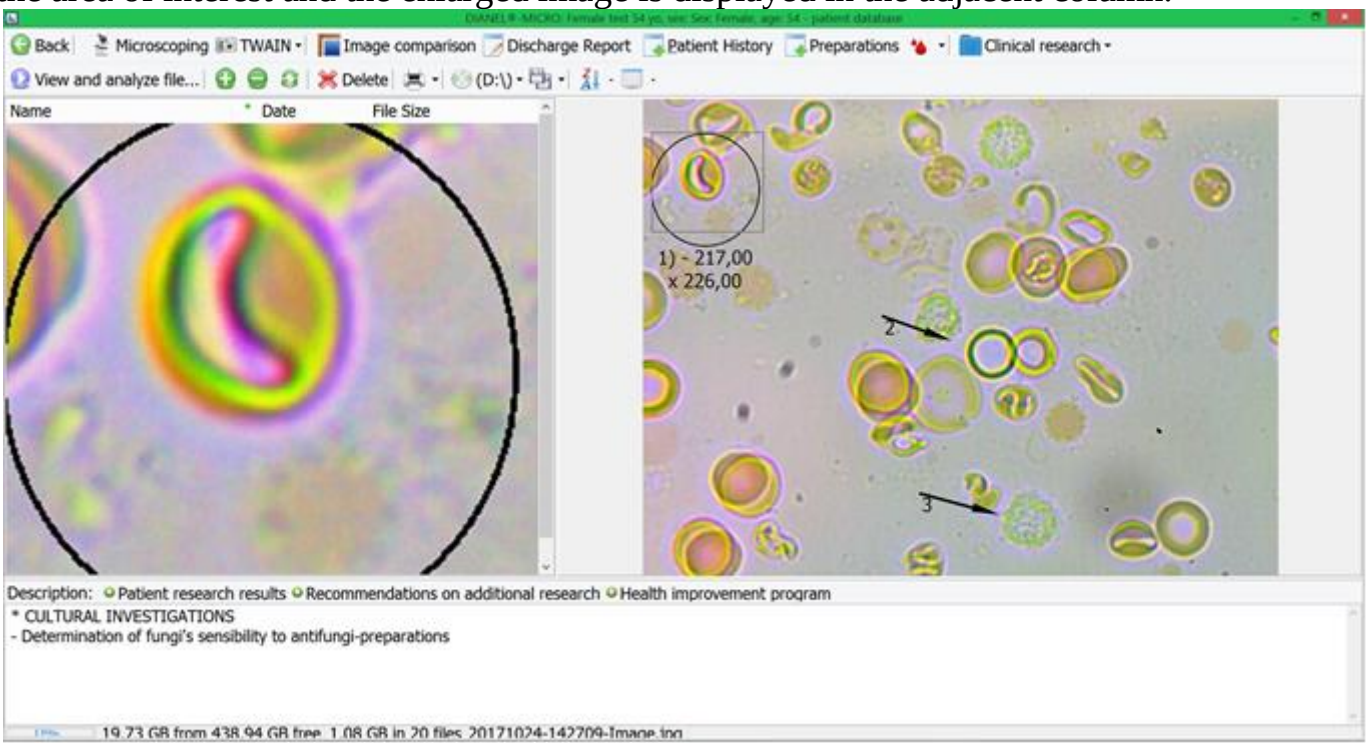
. After that, the results of the studies automatically fall into the epicrisis of the patient.




Simultaneously with the display of the results of the examinations in the epicrisis, the results are displayed in the Notes line in the window «DIANEL-MICRO - examinations ... name, Sex, Age ... «.

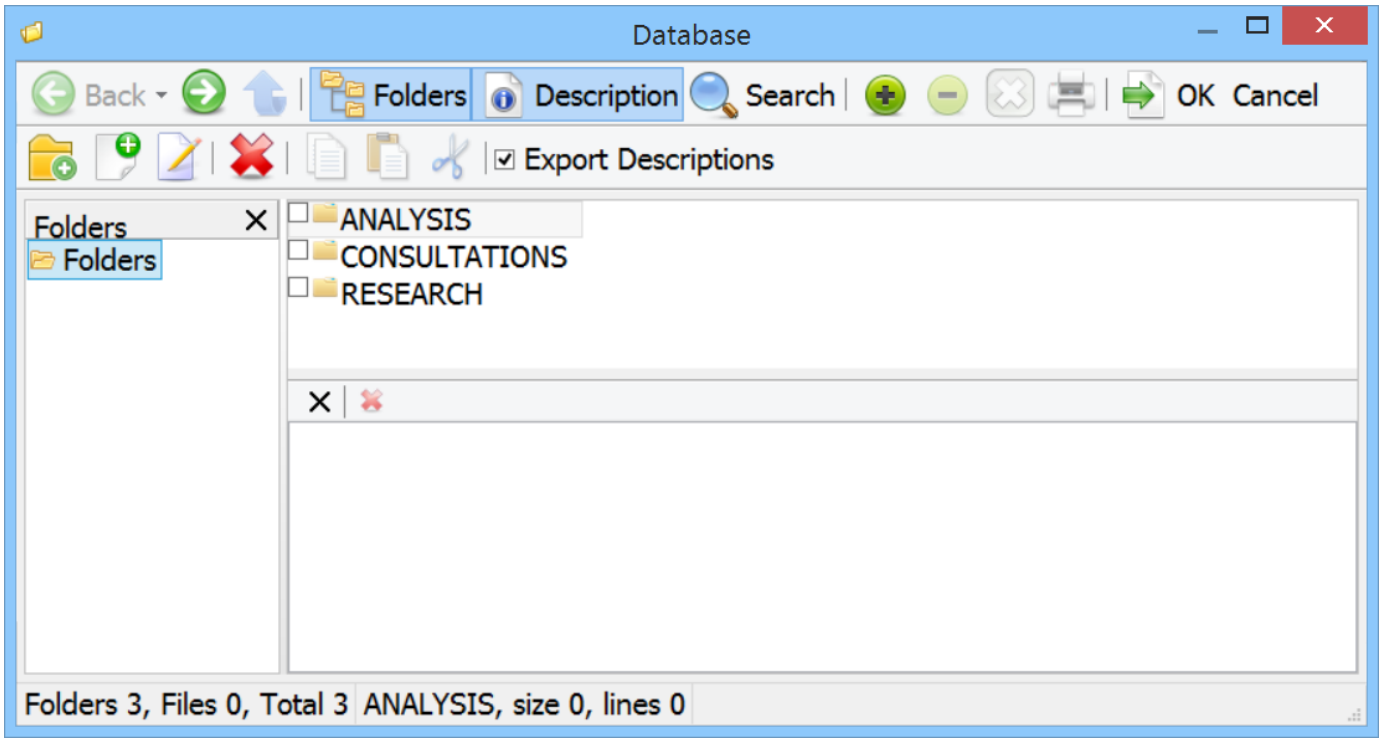



It is possible to view the received images in detail. To do this, move the mouse cursor over the area of interest and the enlarged image is displayed in the adjacent column.

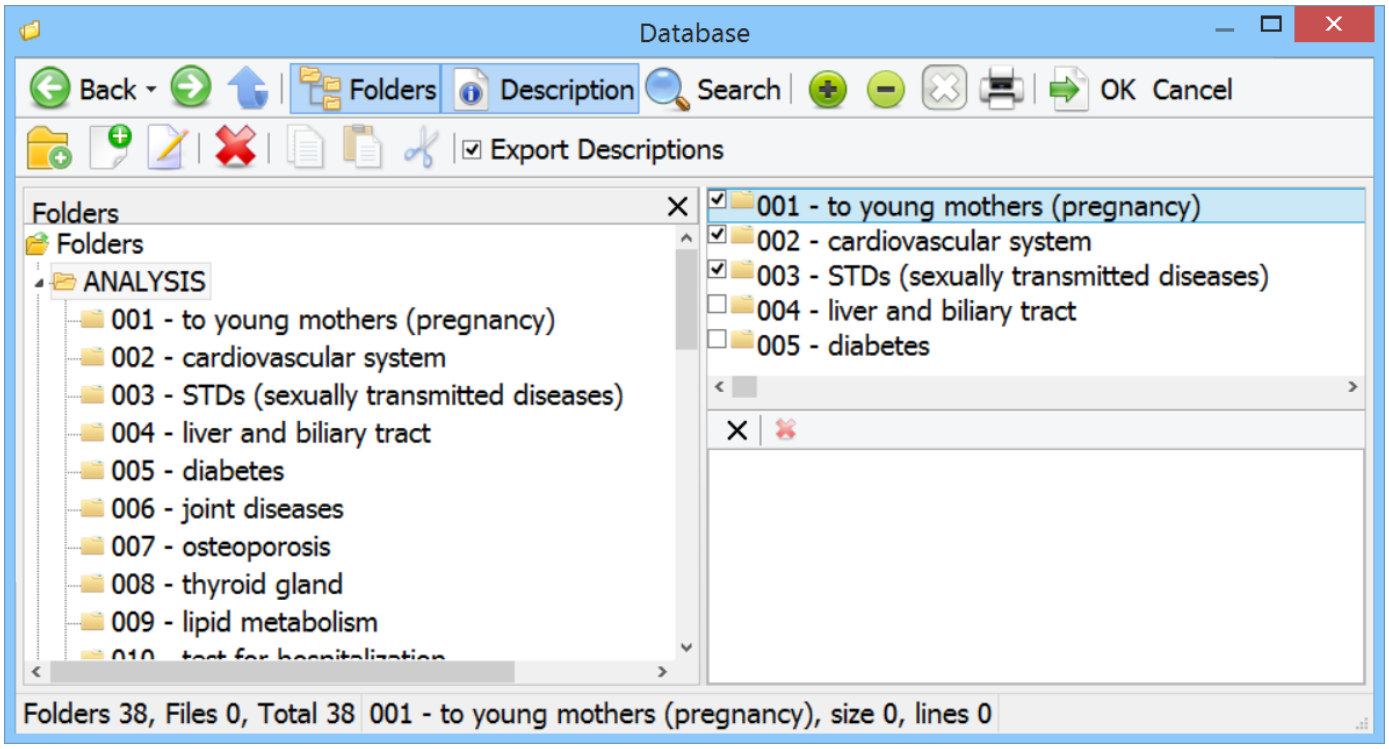



### 3.2.10.1 Recommendations on additional reserch

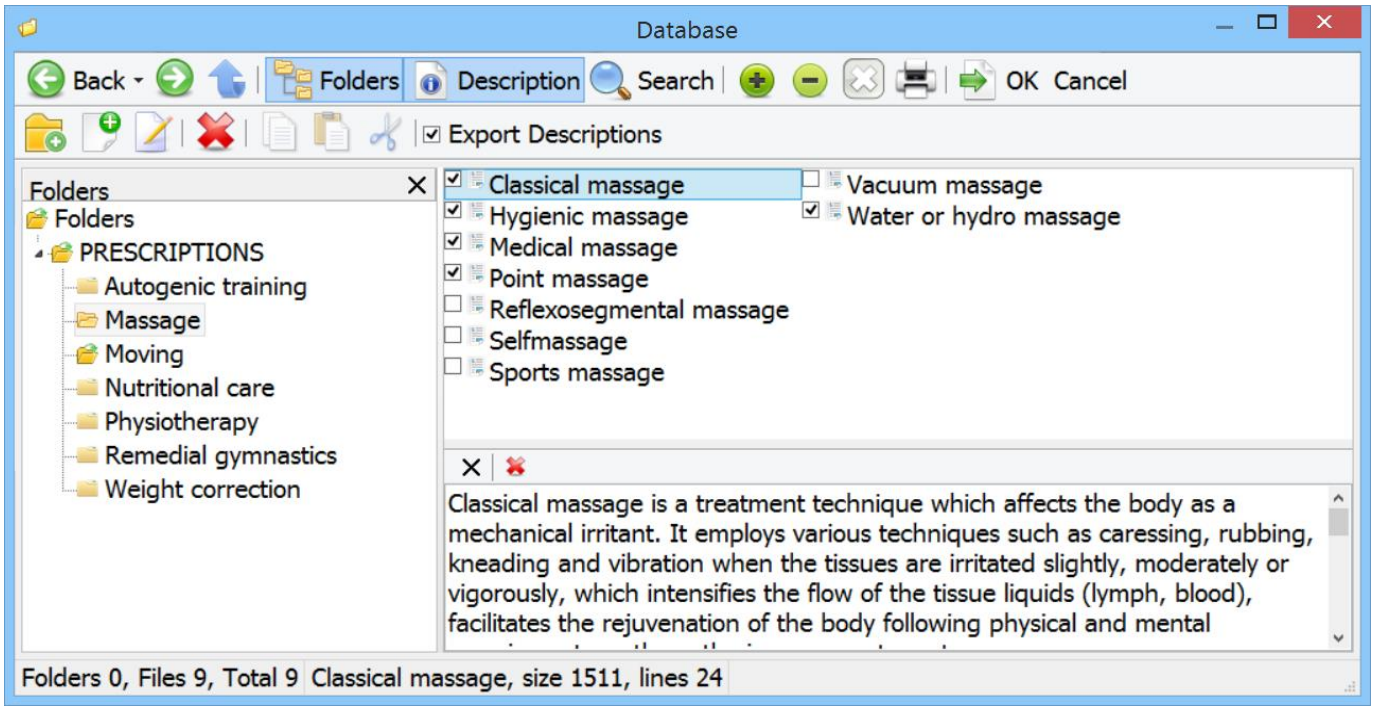
In the window «DIANEL-MICRO -...Name, Gender, Age ...», the line «Description» has the ability to assign recommended analyzes of studies and consultations. To do this, press «Recommendations on additional reserch» and get into the «Database» window, where we mark the required items with «checkmarks».




Next, click on the desired folder, previously marked with a checkmark. A list of suggested analyses, studies and consultations opens. When moving to folders also marked with a checkmark, the desired positions.

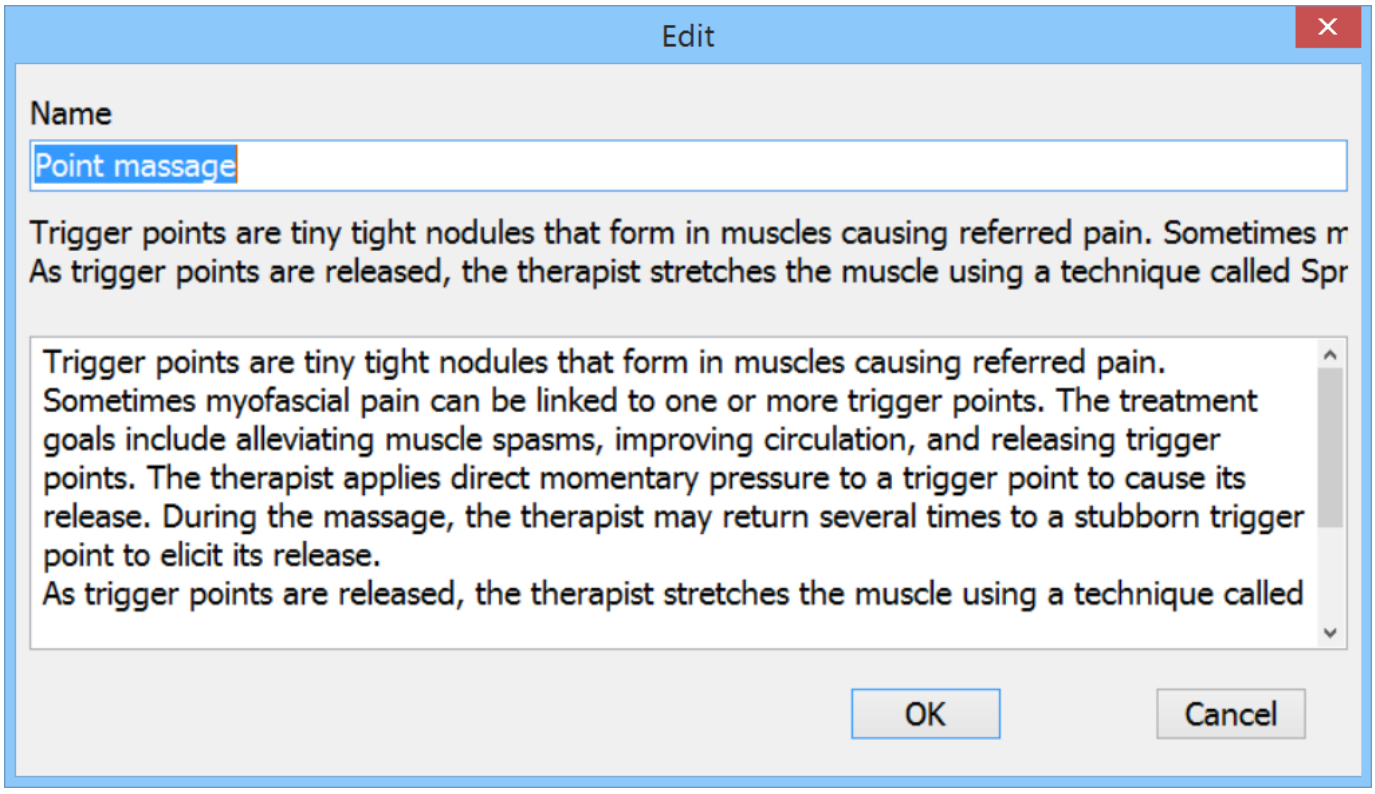



Next, on the selected folder to go to the list of positions and select the recommended ones. A list of recommended analyzes (examinations / consultations) opens

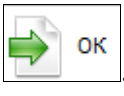



Item marked with a cursor can be edited, add the necessary descriptions. To do this, use

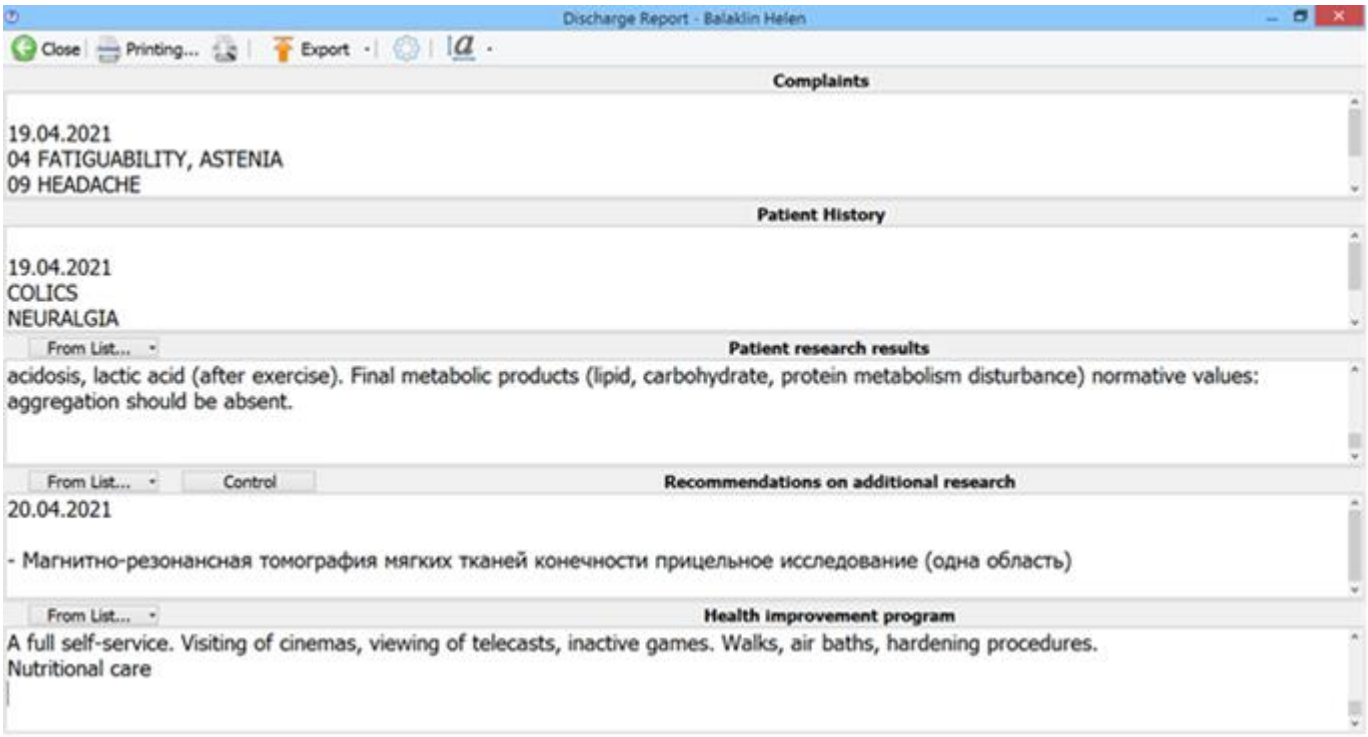
double-click LMB on the selected position or the button Edit . An editing window opens with the name of the previously selected item. Comments are entered in the bottom line with subsequent confirmation with the «OK» button. The editing process is carried out on all selected positions.




To confirm the performed actions, click the «OK» button.

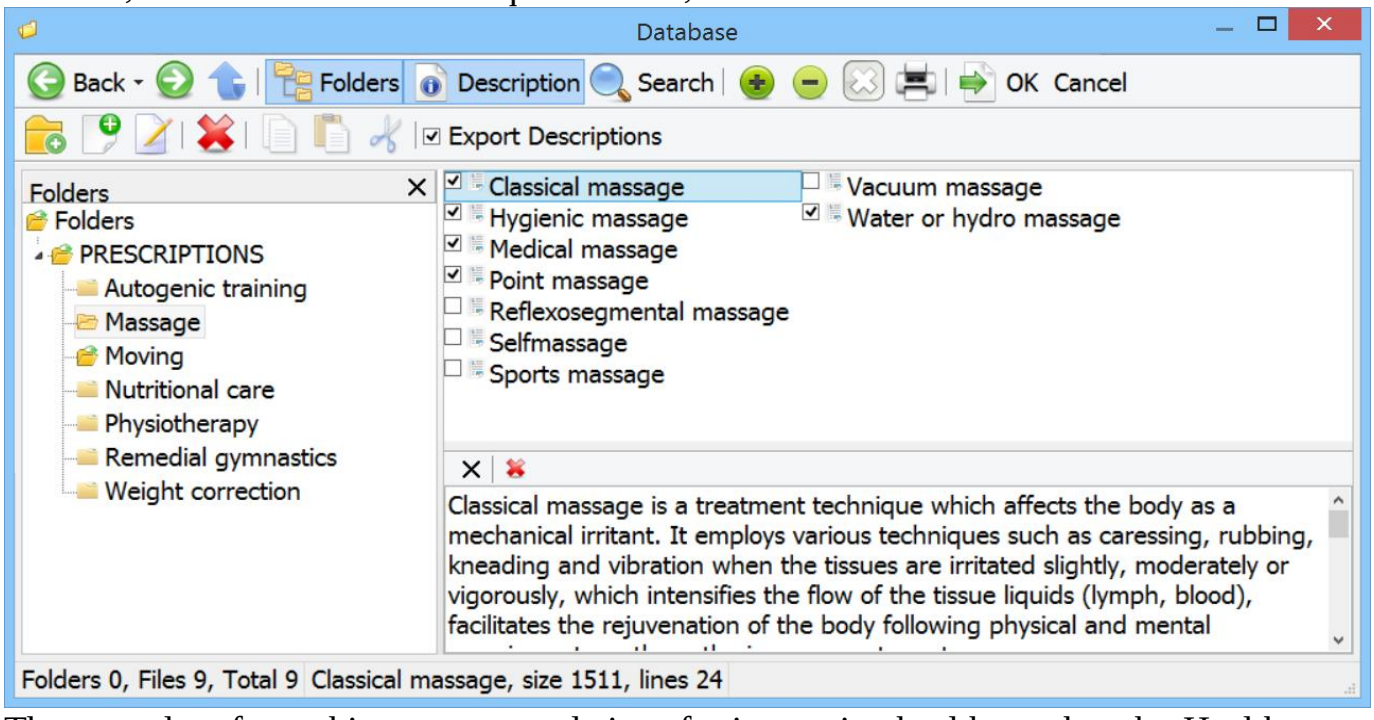
To further add the above information to the patient's epicrisis, press the button 

. After that, the results of the studies automatically fall into the epicrisis of the patient.



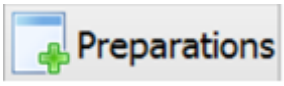

### 3.2.10.2 Health Improvement Program

In the «Description» line, the «DIANEL-MICRO – researches ... full name, gender, age ... « window, it is possible to provide recommendations on the tab «Health Improvement Program». To do this, click «Health Improvement Program» and get into the «Database» window, where we tick off the required items, etc.

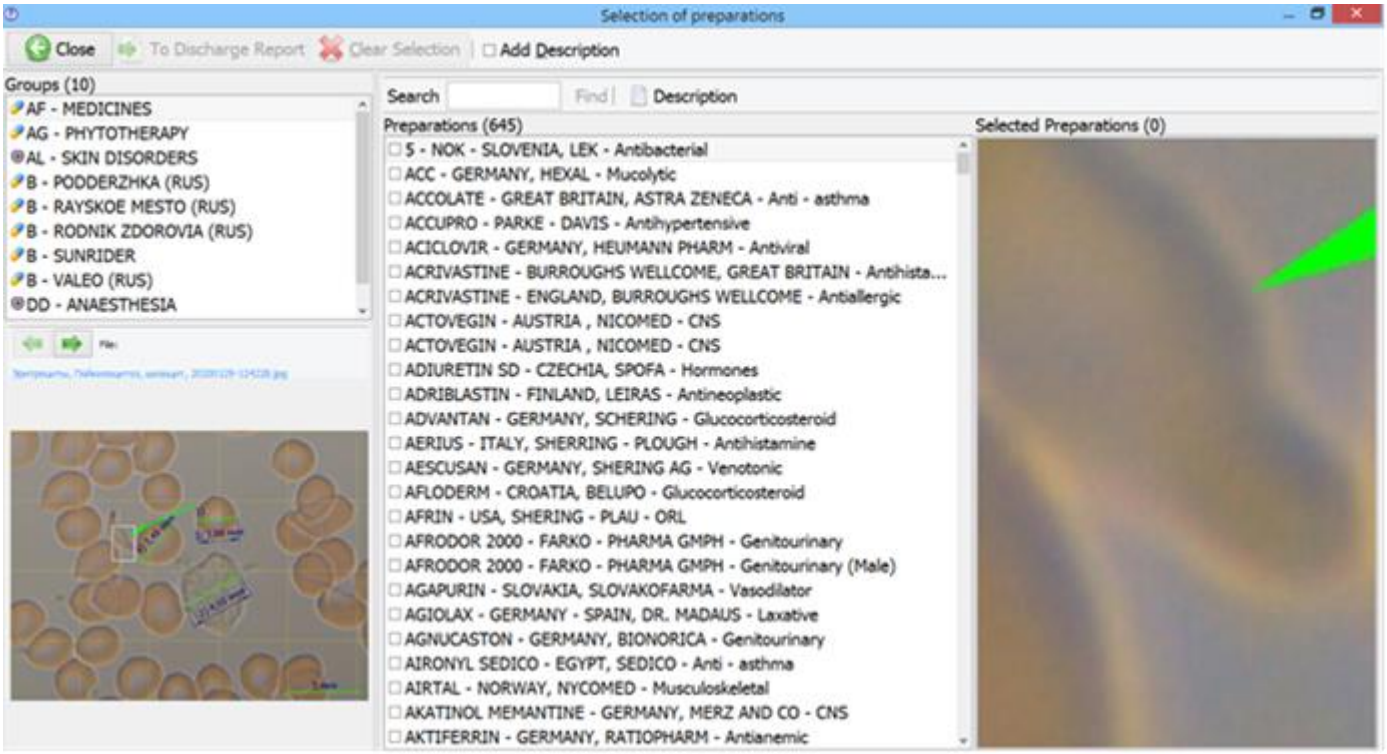



The procedure for making recommendations for improving health, on the tab «Health Improvement Program», is similar to the procedure described above «Recommendations for additional examinations» and will also be reflected in the patient's epicrisis.
Feel free to edit and update recommendation according your needs.

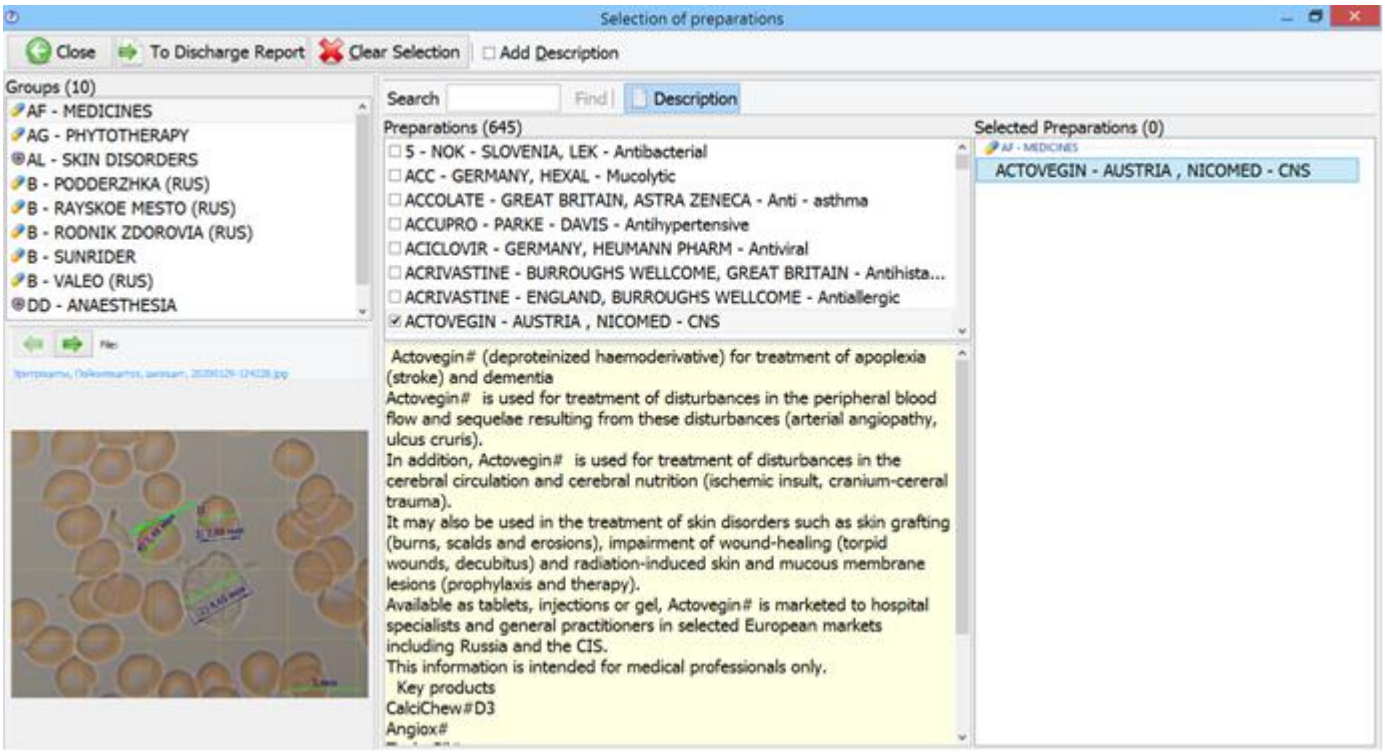
### 3.2.11 Selection of standards

Mode «Selection of standards», by button 

, the window «DIANEL-MICRO – researches ... full name, gender, age ... « is intended for the convenience of the user when prescribing the recommended maintenance and improvement of the patient's health. To do this, on the button «Preparation» and get into the «Selection of preparation « window, where a group of standards and tick the diagnoses or recommended appointments, depending on the selected group.

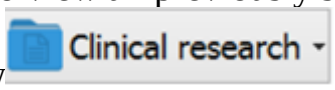



When choosing a diagnosis or recommended appointments, in the lower part of the «Preparation» column, a description of the selected standard is displayed with the possibility of editing, when you check the box in the «Description» function.



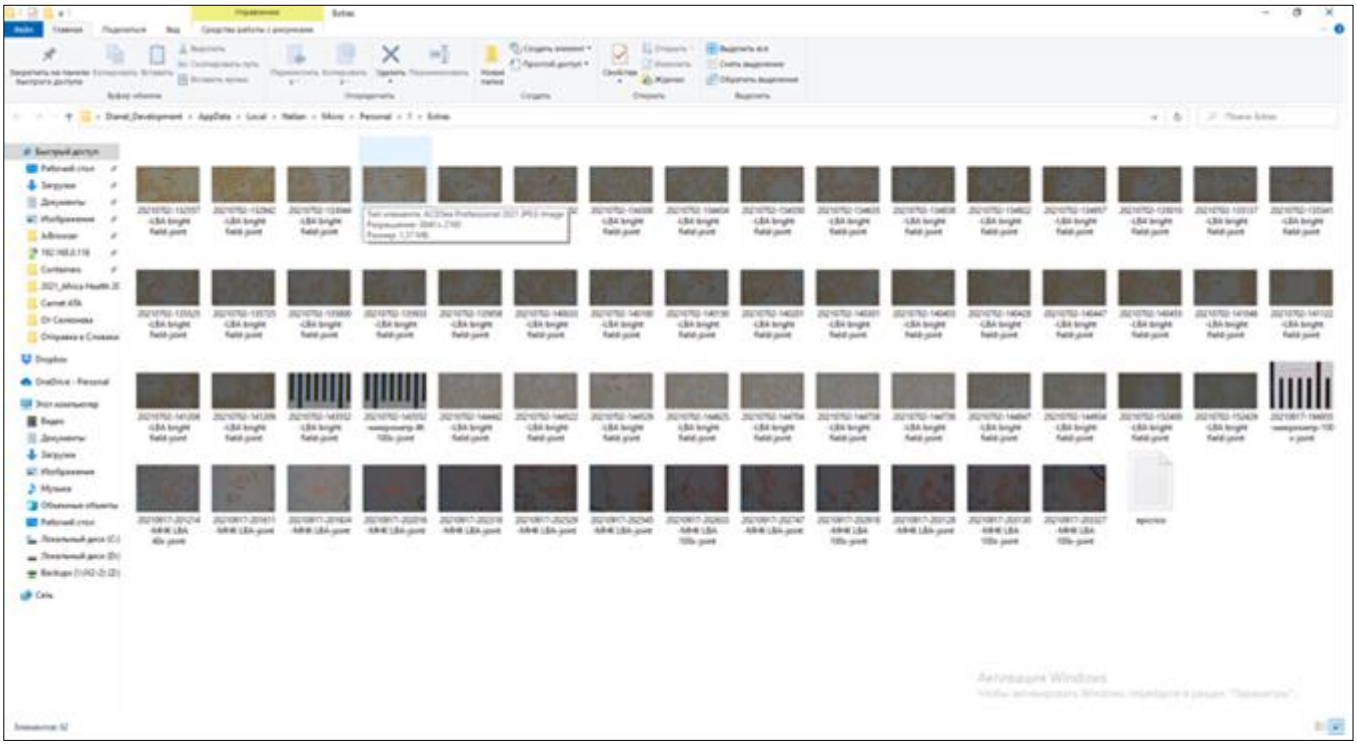

### 3.2.12Clinical studies

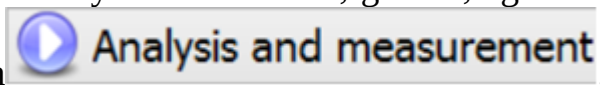
The Software has the ability to view all previously saved examinations and epicrises.

Click on the button to view 

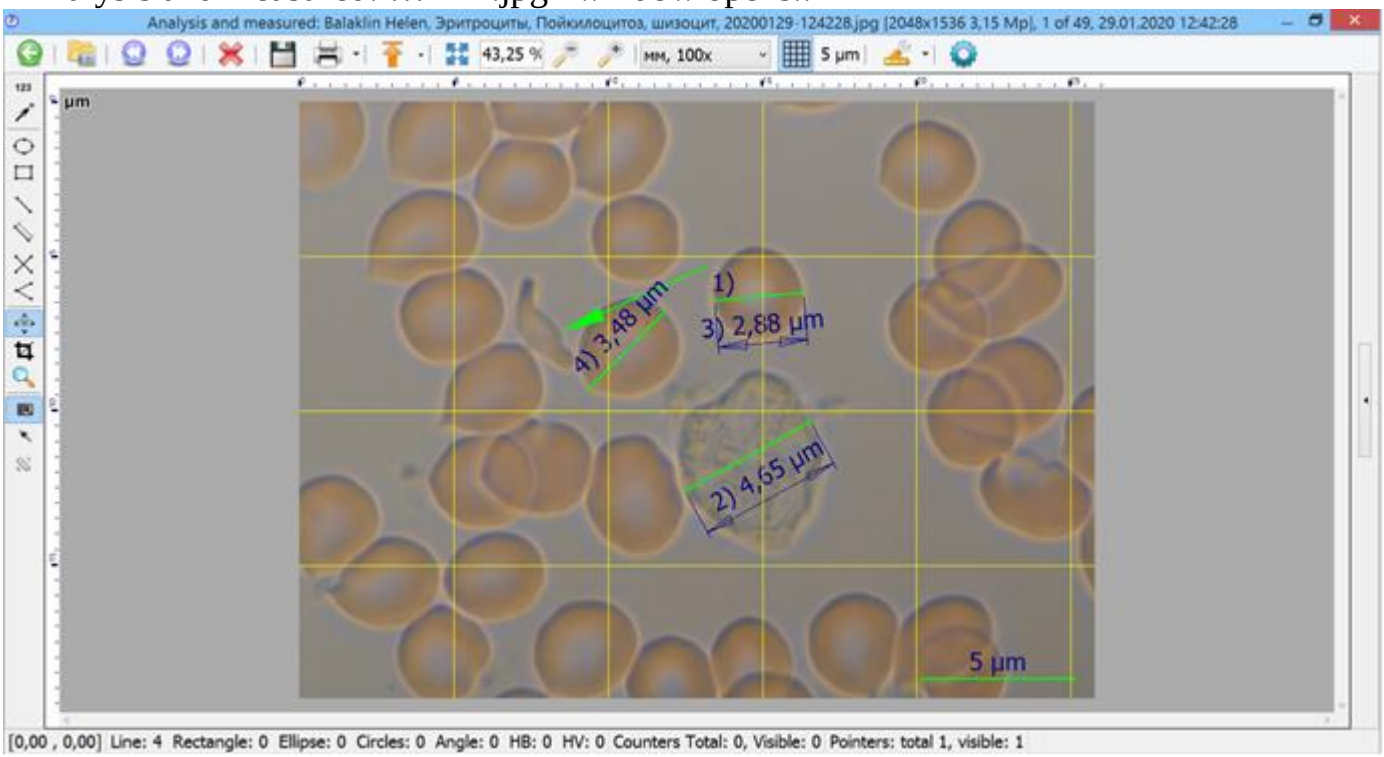
, in the window «DIANEL-MICRO – researches ... full name, gender, age ... «. A folder opens on the PC with the results of previously saved epicrises, images and videos of the patient's examinations, which can be used at the discretion of the Operator (view, download to external media, etc.).

### 3.2.13Evaluation and measurement



The Software has the ability to view the ongoing analysis and measurement of micro-objects during the survey, as well as previously saved survey image files.
To view in the window «DIANEL-MICRO - surveys» ... full name, gender, age ... «select the desired file and click on the button 

. The «Analysis and measured: … xxx.jpg» window opens..




The window contains:
- a set of measurement tools;

- «Show grid» function (replaces «Goryaev's Camera») by button , with grid spacing

. The «Grid» function replaces the «Goryaev Camera» and is used as an optical device for visual counting of micro-objects in a given grid step

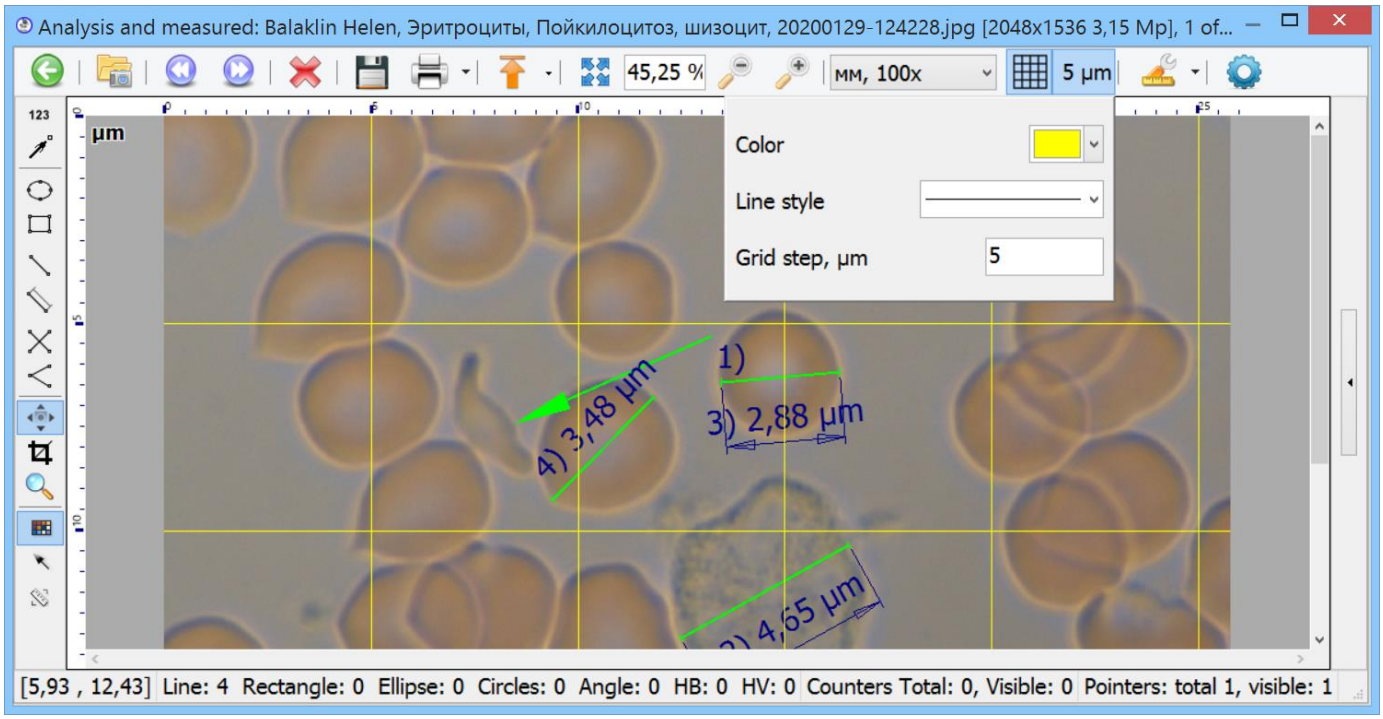
### 3.2.13.1 Grid options

Mesh parameters are set:

- □ in the window settings «Video capture» -> «Video capture settings» -> «Grid option»
- □ in the window « Analysis and measured: ... xxxx»:

To do this, click on the «Customize the Grid « button. 

and in the settings that open, set the color, line style and grid step. Confirm by clicking again on the «Customize the Grid « button.




The grid is set up, then the objects requiring measurement are selected and the measurement is carried out.
The grid is set at the discretion of the Operator, to disable the grid, click on its icon.

### 3.2.13.2 Zoom to fit window

With the help of the Full Screen mode (Scaling to fit the window), the Operator has more space to view video, text and other information. Executed by button

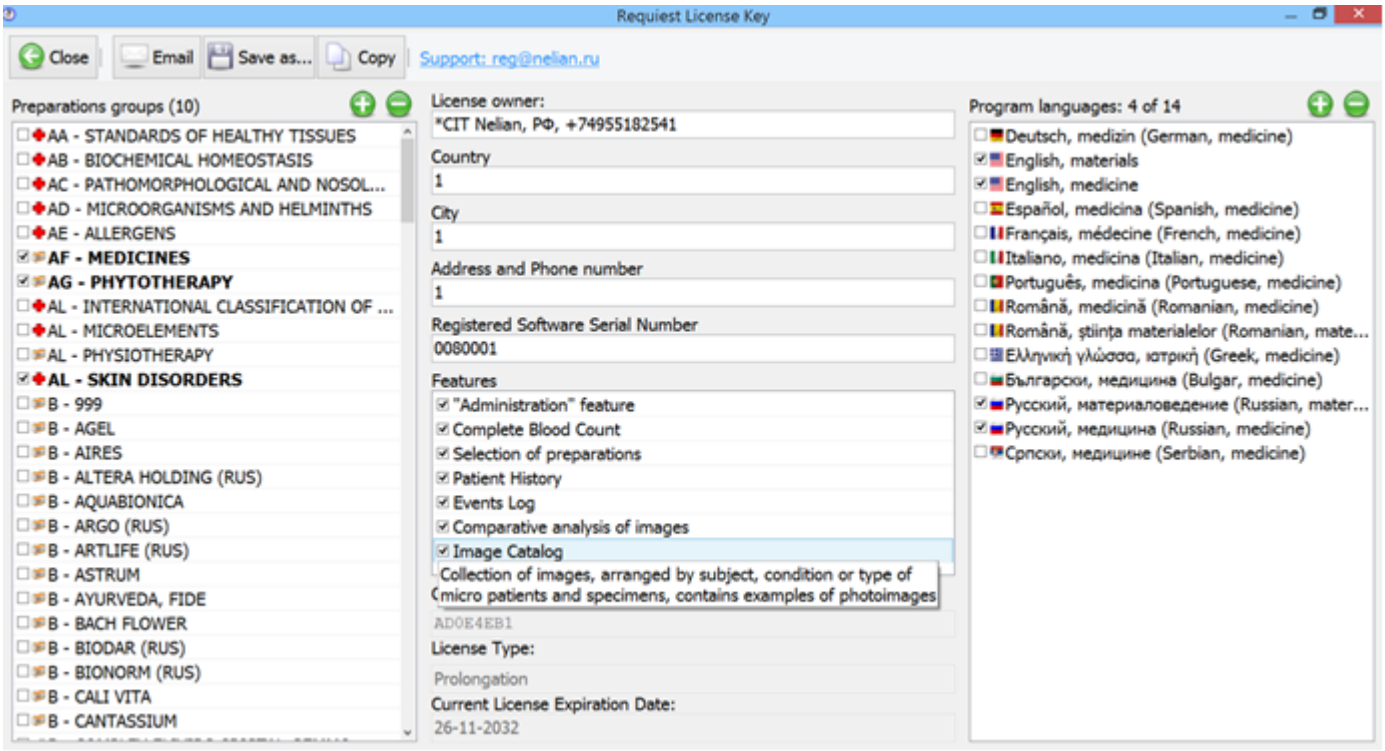
. An additional function of setting the window size is the display of the zoom percentage;

### 3.2.13.3 Saving and Printing

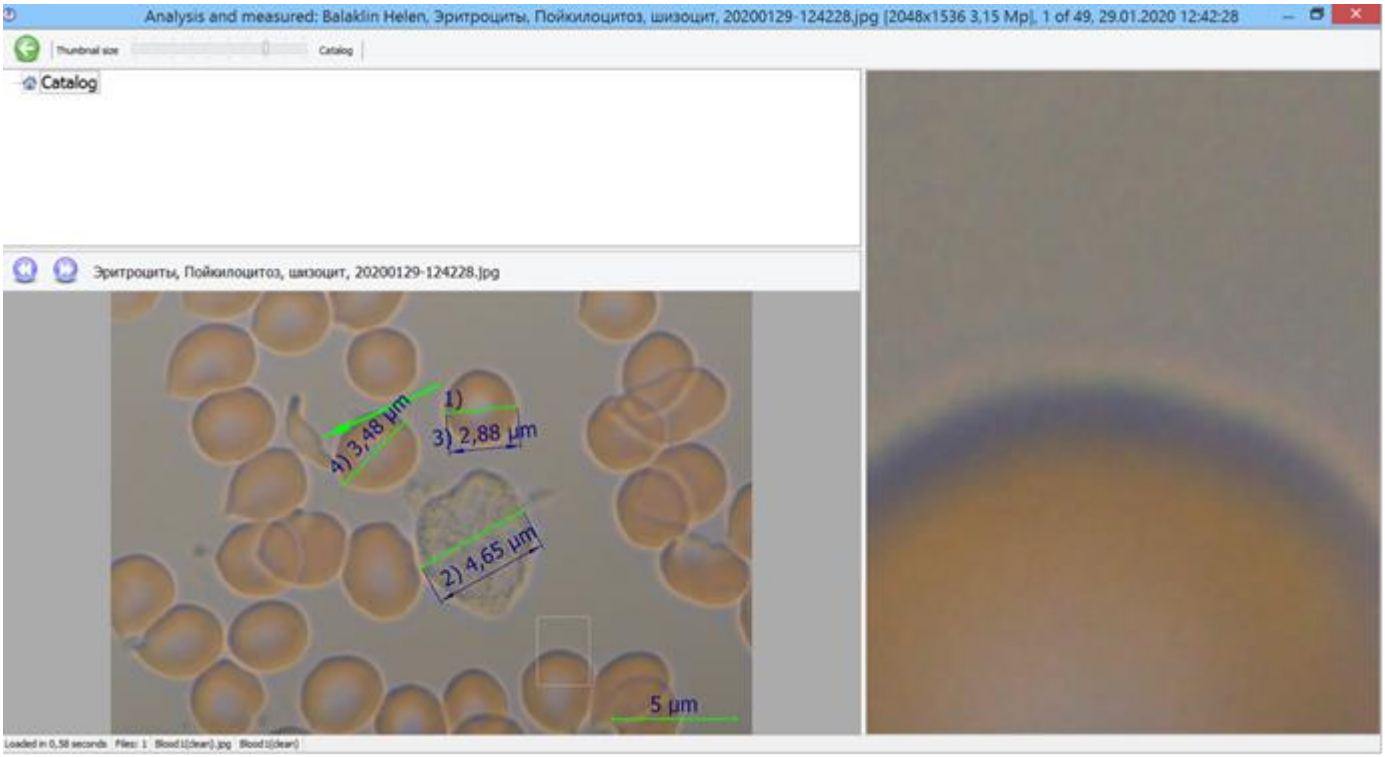
Click the button to save and print images. . It is possible to set the conditions for printing, exporting and previewing the contents of a file (document);

### 3.2.13.4 Image catalo

At the additional request of the user, the catalog «Atlas structured by subject, state or type of microprobes and samples» is embedded in the Software, which contains examples of images of microobjects with a description.




To go to the image catalog, click on the button . The «Analysis and measured: xxx.jpg» window opens. Clicking on the «Catalog» folder opens a list of subfolders with image files. The operator has the opportunity to supplement the Catalog of images of micro-objects at his discretion.



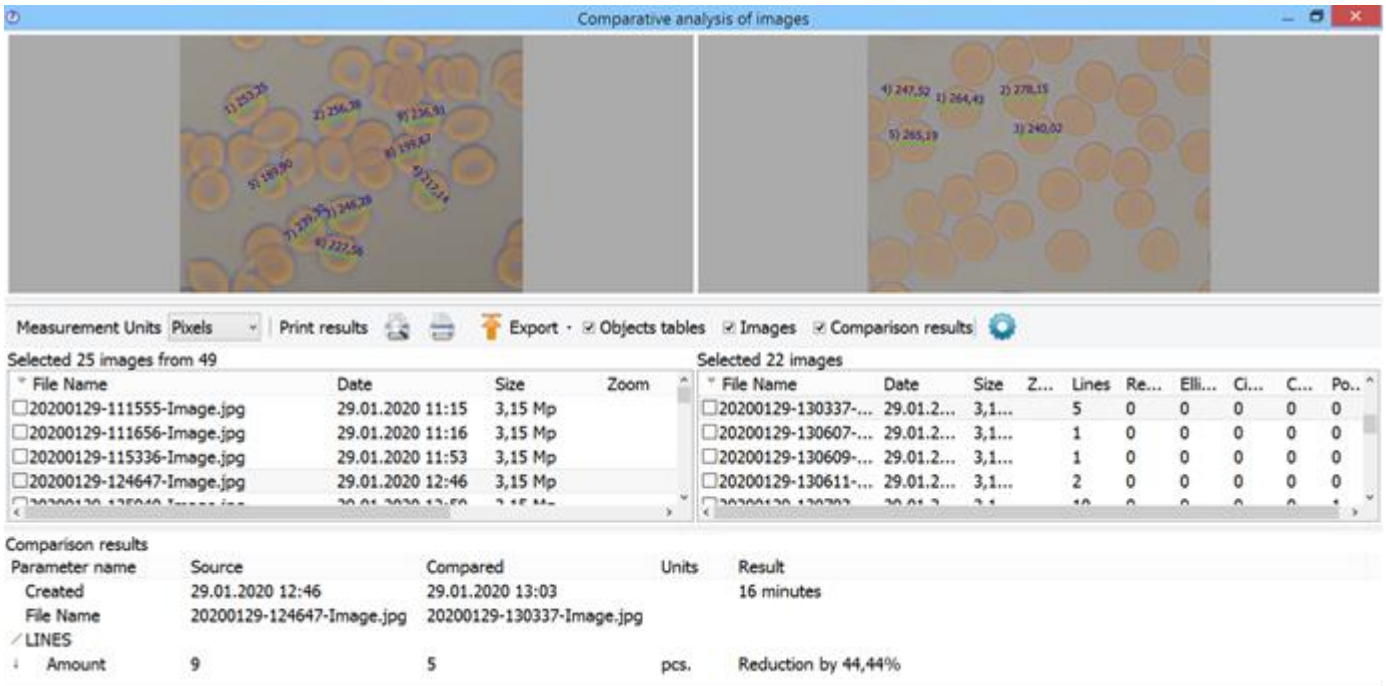

Additionally, in the window there is the possibility of viewing the studied micro-objects, pre-selected images in the window «DIANEL-MICRO – researches ... full name, gender, age ... «, with high magnification (the magnification is indicated when making settings in the window «Analysis and measured: xxx.jpg». For a detailed examination, it is necessary

to place the cursor square on the micro-object, which will be displayed with an increase in the left column of this window and sharpen the image in the right column using the scroll wheel of the computer mouse.
The size of the columns is adjusted by the slider on the scale in the command line of the window.

With buttons jumps to the previous or next image file.

### 3.2.14Comparative image analysis

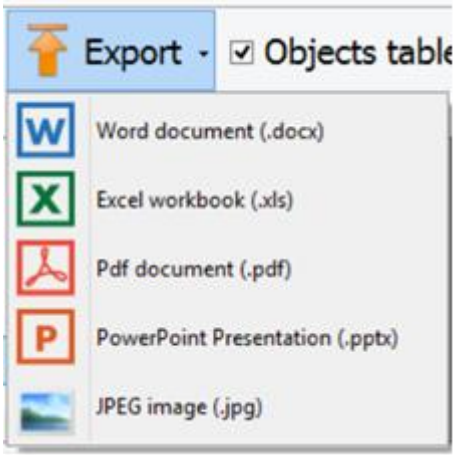
All images involved in the comparison must be calibrated.
The Software has the ability to compare samples in the «Comparative Analysis of Image»:



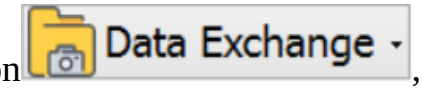

The program allows you to track the dynamics of changes in samples in the process of recovery on the science-based measurement changes. Comparison is performed automatically, after the Operator selects the objects to be compared from previously saved ones, in the window «DIANEL-MICRO – researches ... full name, gender, age ... «
Image comparison automatically works in two modes:
- comparison of one image with another,
- comparison of several images with several other images.

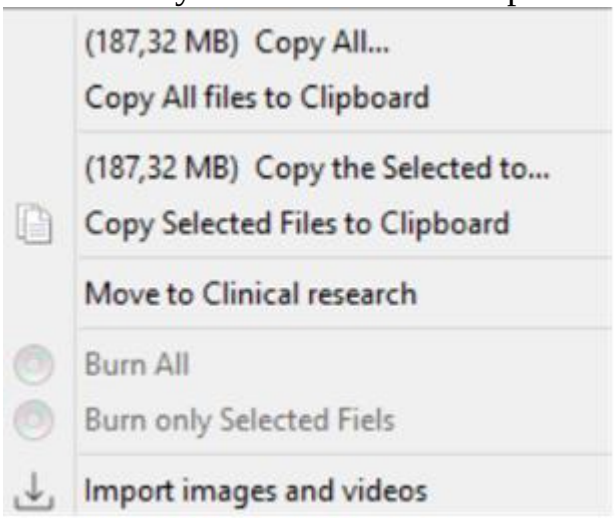
The comparison takes place on the objects of measurement, counters and pointers on the image. To carry out the comparison, you need to select the necessary files in the left and right columns of the table, highlighting them with a “tick”. Set the “Units of measurement” according to the lens with which the image was saved and the previously performed calibration, display in the Object Table, Images, Comparison Results window. Further, in the lower part of the «Comparative Image Analysis» window, the results of comparisons are displayed with the parameters of the research object, the Initial date and the Comparison date of the research, the Units of measurement and the Comparison result in percent.

Additional functions of the window are: preview of the event log with subsequent printing, by buttons and «Export» with the ability to select the format for saving a comparative analysis

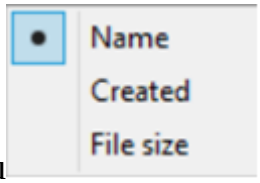



### 3.2.15Data exchange

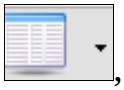
Communication function, by button  , designed to download or copy images and video files to selected devices and folders. To do this, click on the «Data Exchange» button and select the one you need from the drop-down menu.

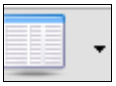
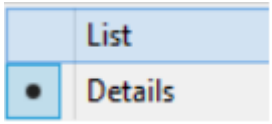



### 3.2.16Additional modes

Mode «Changing the sorting of the list of examinations», by the button , is intended for the convenience of the user when forming the files saved in the list and their further use in work. To do this, click on the button and choose from the dropdown menu 

.

Mode «Changing the display mode of the list of image files», by the button  , is intended for the convenience of the user when forming the files saved in the list and their

further use in work. To do this, click on the button  nd choose from the dropdown menu 

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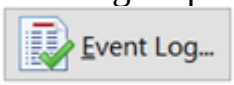
### 3.2.17Event log

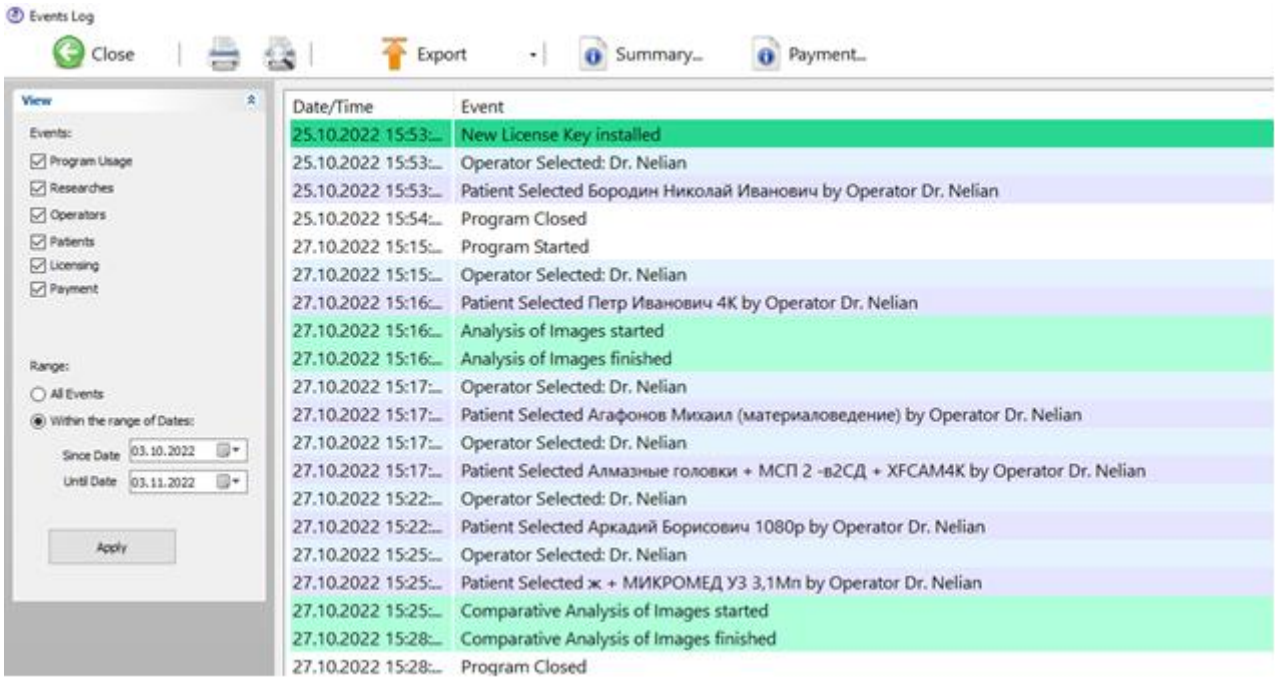
After the reception of patients by operators, it is possible to view all completed events in the Software. To do this, use the «Event Log» function in the «DIANEL-MICRO: Operators» window, which allows you to quickly obtain information in the form of reports: summary statistics of operators' activities, summary information about the number of examinations performed, accepted payment, a log of the Software, conducted examinations, the number of specimens and samples evaluated. The journal has customizable filters, which allows you to conveniently and quickly receive summary and statistical information that allows you to evaluate Key Performance Indicators.

The log records the date and time of the following events:

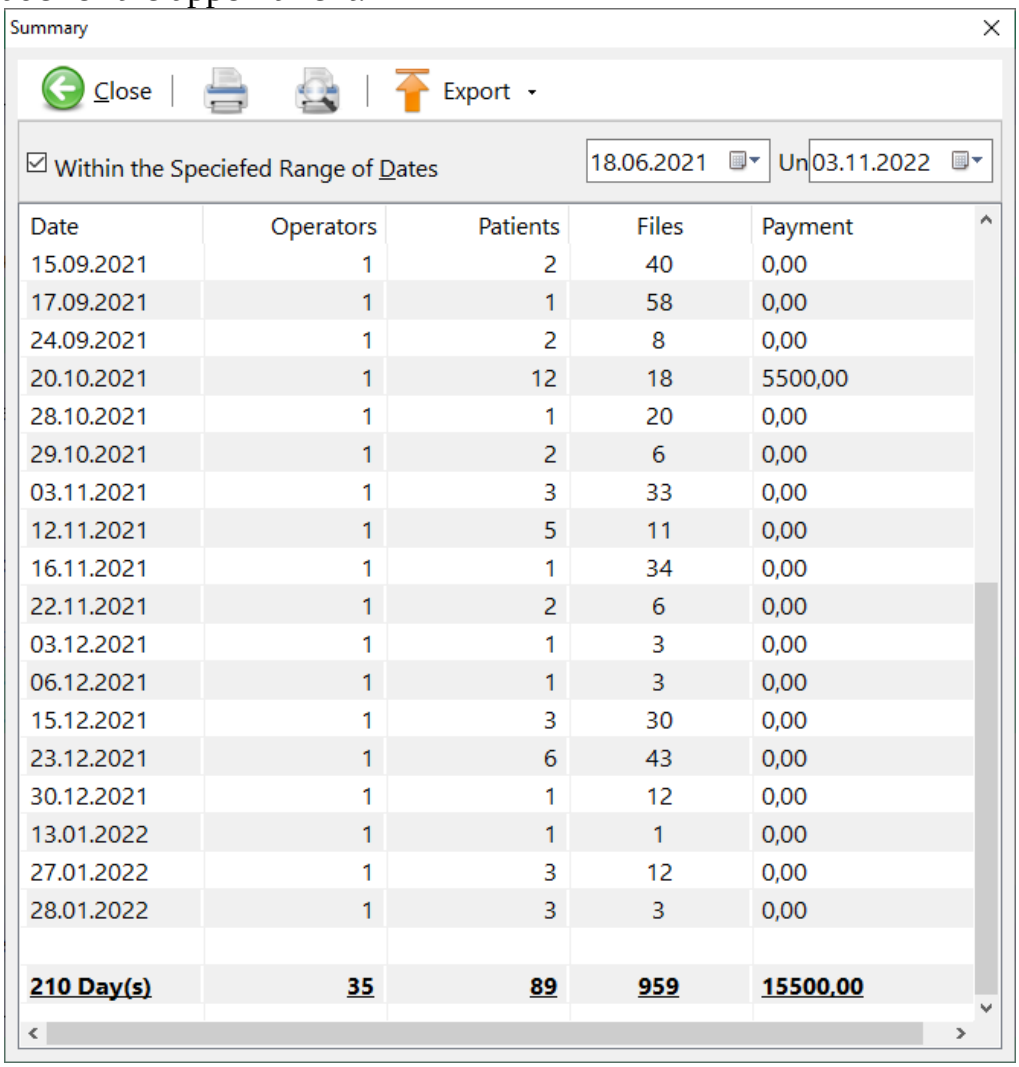
- start the Software,
- the name of the operator and the start time of his work,
- login to the administrator Software - allows you to track unauthorized administrator login
- create a new patient/sample/sample and start working with a patient/sample/sample, or select an existing patient/sample/sample and start working with it;
- indication of the amount of payment, if the cost of the service is paid,
- Start video capture (F4);
- an indication of the number of saved images (F2) and videos for each patient / sample - can serve as a criterion for the care and conscientiousness of the operator / laboratory assistant,
- End of video capture
- the beginning of the process of qualitative analysis, evaluation and measurement of objects in the images of the sample/sample/biomaterials of the patient;
- completion of the qualitative analysis process - the amount of time spent is a sufficient indicator of an effective and comprehensive assessment of the collected and analyzed data on the state of the sample / sample / patient biomaterials;
- end of work with a patient/sample (when moving to a new study of a sample/sample/patient) or when exiting the Software,
- selection of a patient / sample / sample from the file cabinet and continuation of work and research, etc.,
- exit time from the Software.

Viewing all performed actions in the Software is performed by pressing the button 

in the Operators window. The «Event Log» window displays reports on the actions performed in the Software

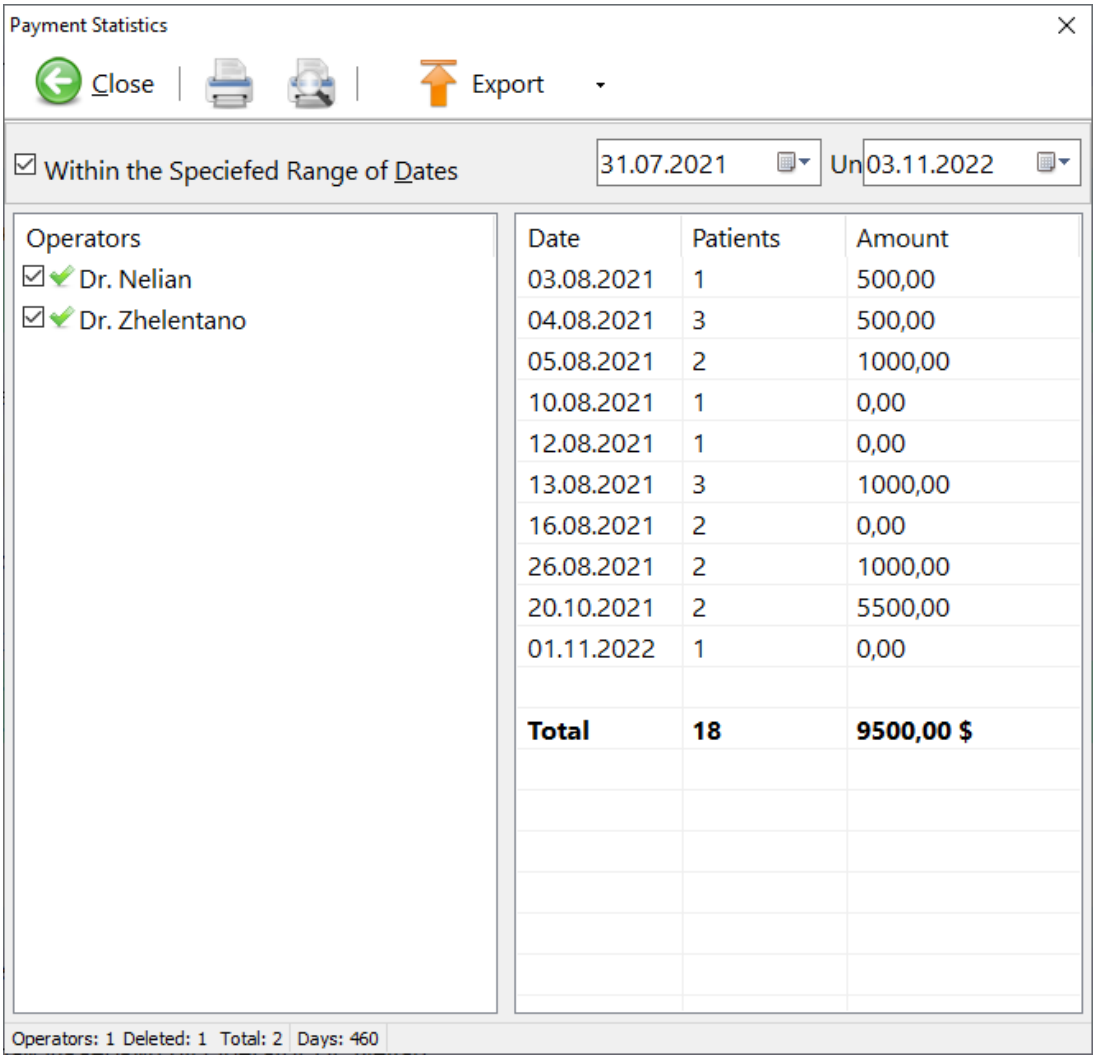



It is possible to view the report on the button «Summary» about the appointments, the number of patients admitted, the date of admission, the number of saved files and the payments made for the appointment.



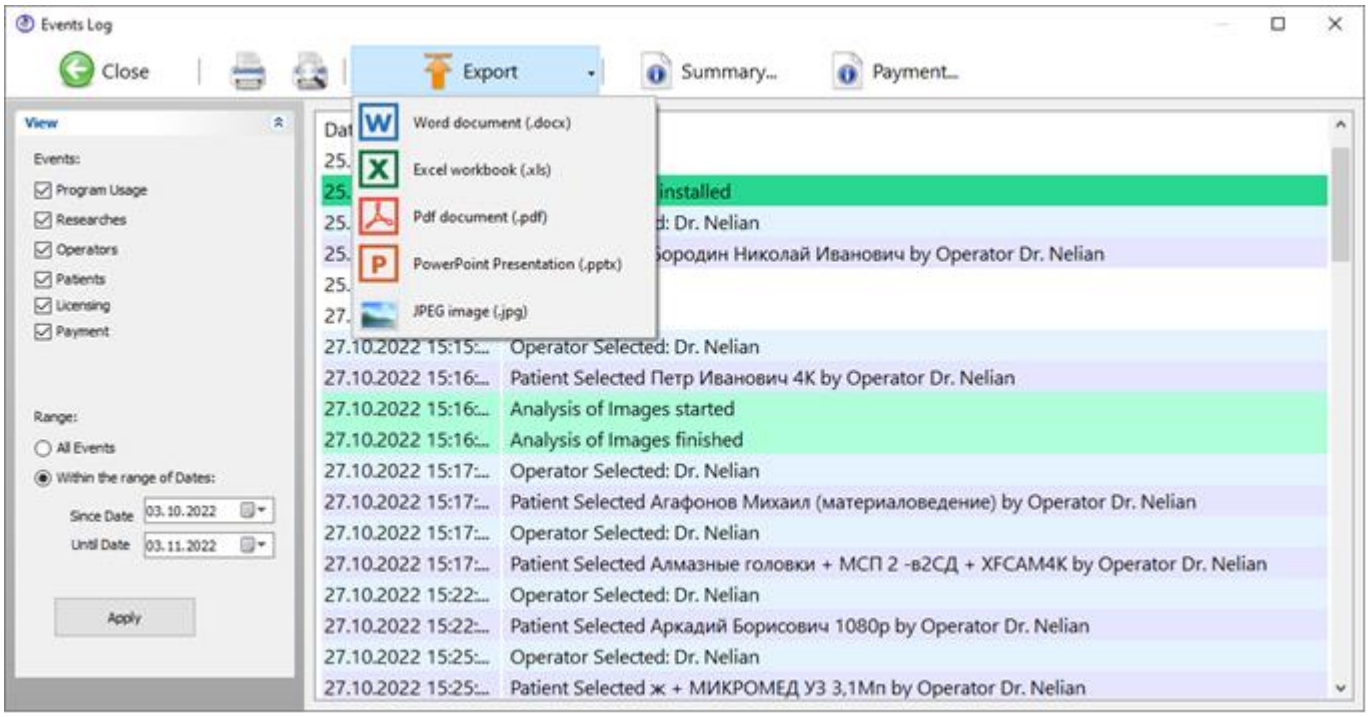

| Date | Operators | Patients | Files | Payment |
|---|---|---|---|---|
| 15.09.2021 | 1 | 2 | 40 | 0,00 |
| 17.09.2021 | 1 | 1 | 58 | 0,00 |
| 24.09.2021 | 1 | 2 | 8 | 0,00 |
| 20.10.2021 | 1 | 12 | 18 | 5500,00 |
| 28.10.2021 | 1 | 1 | 20 | 0,00 |
| 29.10.2021 | 1 | 2 | 6 | 0,00 |
| 03.11.2021 | 1 | 3 | 33 | 0,00 |
| 12.11.2021 | 1 | 5 | 11 | 0,00 |
| 16.11.2021 | 1 | 1 | 34 | 0,00 |
| 22.11.2021 | 1 | 2 | 6 | 0,00 |
| 03.12.2021 | 1 | 1 | 3 | 0,00 |
| 06.12.2021 | 1 | 1 | 3 | 0,00 |
| 15.12.2021 | 1 | 3 | 30 | 0,00 |
| 23.12.2021 | 1 | 6 | 43 | 0,00 |
| 30.12.2021 | 1 | 1 | 12 | 0,00 |
| 13.01.2022 | 1 | 1 | 1 | 0,00 |
| 27.01.2022 | 1 | 3 | 12 | 0,00 |
| 28.01.2022 | 1 | 3 | 3 | 0,00 |
| **210 Day(s)** | **35** | **89** | **959** | **15500,00** |

It is possible to view the payments made by clicking the «Payment Statistics» button, for each operator, the number of admitted patients, the date of admission and the amount of payment for the appointment, for the selected period.




By clicking the «Export» button, information is exported for subsequent saving in the selected format from the proposed list.

By print buttons the event log is previewed and then printed




## 3.3 Exiting the Software

Upon completion of work in the Software, you must return to the main window using the «Close» button in the «DIANEL-MICRO: Operators» window and click on the «Close» button in the main window.

Software closed.