



**MedVision**

**MANUAL**

**S.HYS**

**Virtual Simulator**

**for Practical Skills in Hysteroscopy**

**HystVision STANDARD**







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## Introduction

The simulator is a training unit for developing skills in hysteroscopic endoscopy.

A computer system, which generates virtual 3D image and imitates the use of real instruments and employs a special-purpose simulator, supports operating room experience without any risk to the health and life of a real patient.

**Note:** The simulator medical equipment only imitates the real ones and must not be used outside the simulator's environment.

# 1 Setting Up

## 1.1 Start-up

The simulator is plugged into a standard power outlet of 220V/50Hz. To run the simulator, follow the steps below:

1. Make sure that the power cords are not damaged and are connected to the power strip/sockets.
2. Turn on the power switch (0/1) of the power strip (if used).
3. Start the simulator by pressing the power button.
4. If the LED indicators of the monitors are not on, then try to turn them on manually by pressing the power button of each monitor.
5. After Windows boots up, the simulator operating software runs automatically.

**Note:** If the software has not started automatically, try starting the program through the shortcut on the desktop or restart the simulator by turning it off and on again. If this does not help, contact the technical support.

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## 1.2 Turning off

To turn off the simulator, follow the steps below:

1. Press the power button on the simulator.
2. Turn off the power switch (0/1) of the power strip (if used).

## 2 Software

All exercises are based on real clinical cases:

- Scenarios are based on real patients' background and case records.
- The anatomy of clinical cases is based on real hysteroscopic interventions.
- In addition to clinical cases, video recordings of real operations are offered to watch.

During each exercise, the detailed statistics of actions and errors is recorded.

### **Software components:**

- Training modules
- 3D anatomy visualization
- Controls.

### 3 User saccount

When the simulator starts, the simulation software boots automatically and the startup screen opens (Fig. 3.1). In the start screen menu there are two buttons available: Select User and Create New User.



Fig. 3.1. Startup screen

#### 3.1 Select user

To open the existing profile, click on SELECT USER.

Each user belongs to a specific group assigned during registration.

### 3 USER ACCOUNTS

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The username is displayed only in the relevant group. You can change the group in the Administrator mode.

All existing groups are displayed on the left side of the authentication window (Fig. 3.2). Click on the name of the group the user belongs to and select the user name from the list. Then enter the password in the appropriate box and tap or click on Accept.

Fig. 3.2. Authentication window

#### **3.2 Create new user**

To add a new user, tap or click on Create New User on the start screen (Fig. 3.1). The user can be included into the existing or into a newly created group.

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In the latter case, you will first have to create a new group (see [Creating a New Group](#)).

To include a user into the existing group, select the group from the list on the left side of the window. Then enter the desired profile name and password in the fields Name and Password. Tap on the Create New User button to finish the process.

### **3.3 Create a new group**

To create a new group, tap or click on Create a Group in the Create New User menu. In the pop-up window, (Fig. 3.3) enter the group name and tap or click on OK.

### 3 USER ACCOUNTS

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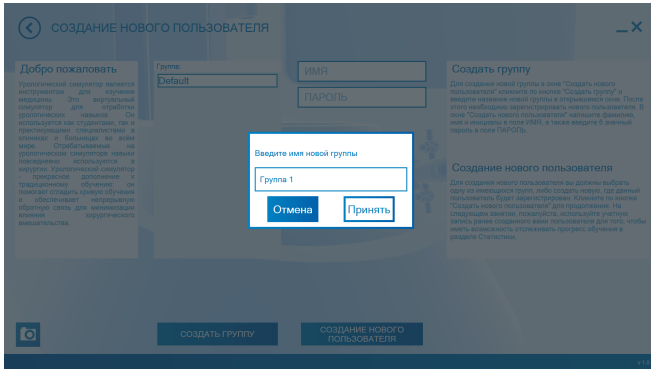


Fig. 3.3. Create a new group

After that, you can add new users to the group during registration or in the authentication window in the administrator mode.

**Note:** To run an exercise or take a training course, the user must log in with their own account only. This is necessary to save statistics data and monitor learning progress (for more information about statistics, see the "Statistics" section).

After completing the authentication the main menu of the simulator will open (Fig. 3.4).

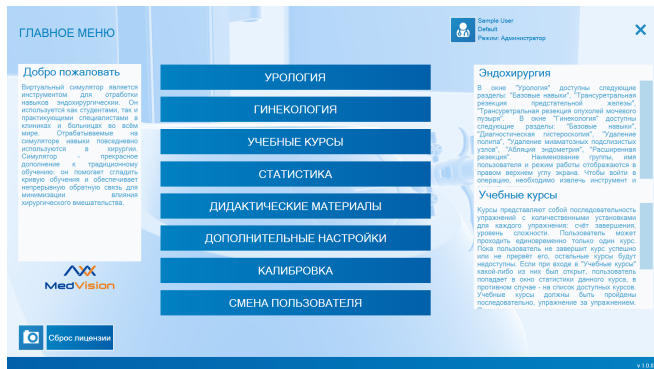


Fig. 3.4. Main menu.

### 3.4 Main menu

The main menu has several sections:

- Statistics;
- Teaching Materials;
- Additional Settings;
- Calibration;
- Select User.

After completing the authentication, the main menu of the simulator will open.

### 3 USER ACCOUNTS

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Gynecology (see Exercises).

In the **Statistics** section, the user can find the results of all completed exercises and courses (see Statistics).

The **Teaching Materials** section contains tutorial videos.

**Additional Settings.** If the monitor settings failed during transportation or assembly of the simulator, use the Settings menu to reset the monitor.

**Calibration** (see Calibration).

The **Select User** section returns you to the original user window where you can change the current user profile or create a new one.

## 4 Exercises

To start an exercise, select the training area in the main menu (Fig. 4.4). In the exercise start menu that opens (Fig. 5.1), select the exercise from the list. In the top right corner of the exercise menu window, you will find the name of the group, username and operation mode data.

### 4.1 Gynecology



Fig. 4.1. Gynecology

## 4 EXERCISES

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The Gynecology section has the following modules:

Basic skills;

Diagnostic hysteroscopy;

Polypectomy;

Removal of myoma submucosal nodes;

Endometrial ablation;

Advanced resection.

The Basic skills module has the following subsections (Fig. 4.2):

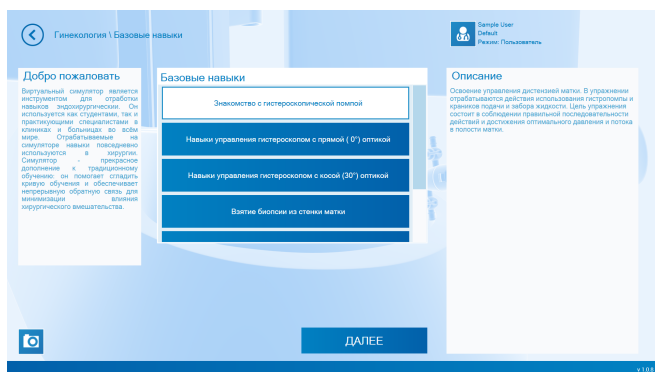


Fig. 4.2. Basic skills

By doing this exercise, the student practices the use of a hystero pump and fluid flow control stopcocks. The purpose of the exercise is to follow the correct sequence of actions and achieve optimal pressure and flow in the uterine cavity. The purpose of the exercise is to follow the correct sequence of actions and reach the appropriate pressure and flow rates in the uterine cavity.

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Each exercise has the Set Difficult and Start Exercise buttons at the bottom of the exercise start window (Fig. 4.3). You can return to the previous menu by tapping Back (<) in the top left corner. Each exercise has three levels of difficulty, i.e. simple, normal, hard.



Fig. 4.3. Set Difficult, Start Exercise and Back

**Note:** Before tapping the Start Exercise button, remove the instrument imitator from the insert port.

## 4 EXERCISES

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The Diagnostic Hysteroscopy module has 12 virtual patient clinical pathology cases of different levels of difficulty. The exercises are used to practice angled optics operations, set a clear image and visualize the entire cavity in the safe environment.

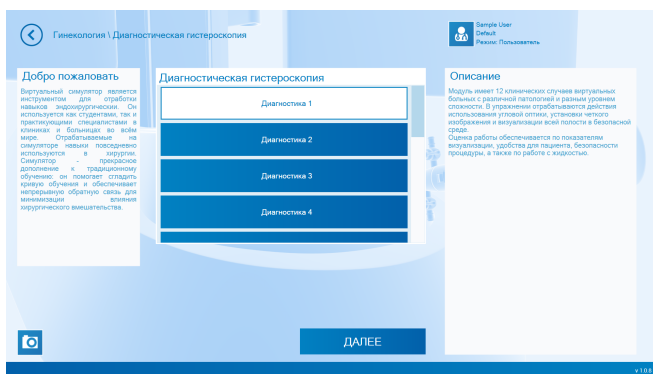


Fig. 4.4. The Diagnostic Hysteroscopy module.

The Polypectomy module has 8 polyp clinical cases of various polyp location and characteristics. The exercise helps to develop initial skills in operative hysteroscopy and use of loop electrode and other instruments.

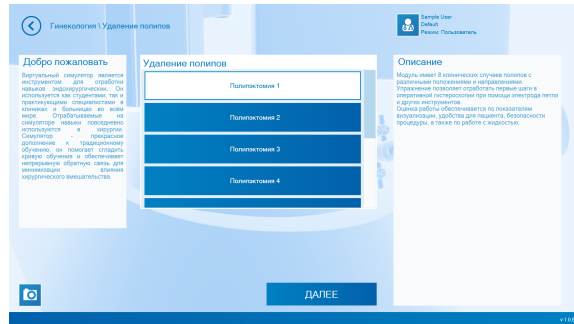


Fig. 4.5. The Polypectomy module.

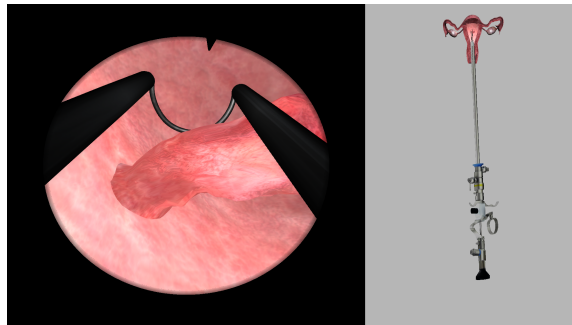


Fig. 4.6. Polypectomy exercise with additional top-view screen.

## 4 EXERCISES

The “Removal of myoma submucosal nodes” module has 8 clinical cases of myoma submucosal nodes of various location and characteristics. The exercise helps to develop initial skills in operative hysteroscopy and use of loop electrode and other instruments.

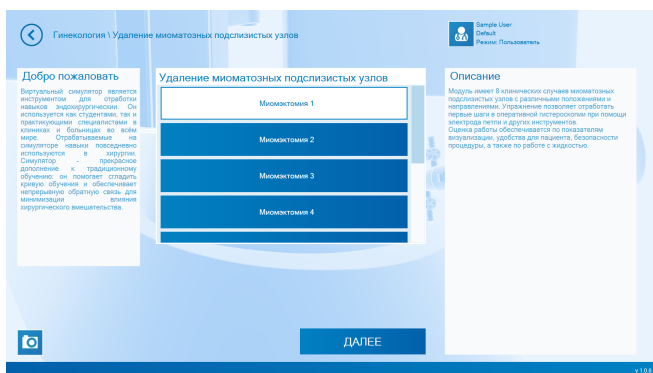


Fig. 4.7. Removal of myoma submucosal nodes

The “Endometrial ablation” module has 4 clinical cases of various uterus shape. The exercise helps to develop endometrial ablation skills.

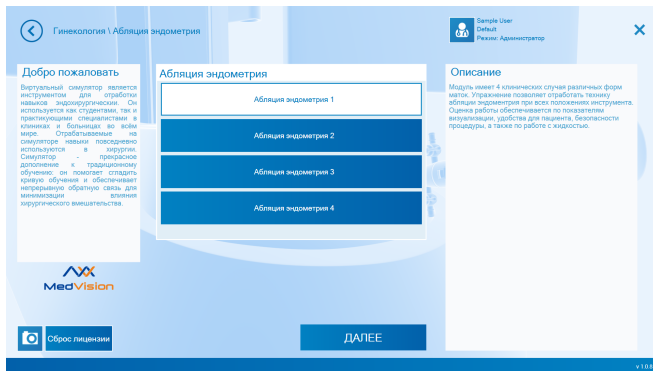


Fig. 4.8. Endometrial ablation.

## 4 EXERCISES

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The “Advanced resection” module has 5 advanced clinical cases. The exercise helps to develop skills in resection of type 1 and 2 myomas, a large polyp and uterine septum.

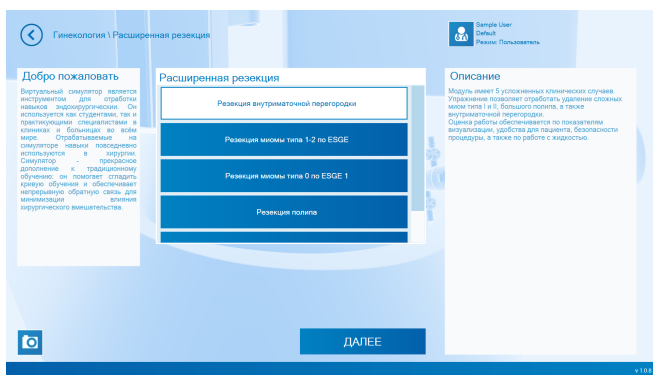


Fig. 4.9. Advanced resection



## 4 EXERCISES

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After analyzing the problem, the user should fix it by tapping the corresponding button on the control panel on the left.

In the course of an exercise, a perforation may occur. In this case, due to a decrease in pressure and heavy bleeding, the user should identify the perforation and decide upon performing a laparoscopic surgery by tapping the Laparoscopy button on the “Arresting of the complications” panel.

### 4.4 Virtual tips

On the second screen, the following virtual tips are available:

**Plan view.** Tap and open an auxiliary window displaying the plan view including the instrument simulator and pathological formation.

**Plan view zoom.** Tap and open an auxiliary window displaying the zoomed in plan view including the instrument simulator and pathological formation.

**Right-side view.** Tap and open an auxiliary window displaying the zoomed right-side view including the instrument simulator and pathological formation.

## 5 Statistics

Statistics is individual for each user and is generated after finishing an exercise.

To view statistics, you need to log in to the software Select User and select the Statistics in the main menu.

The following information on finished simulations will be displayed on the screen (Fig. 5.1):

- date
- time
- exercise name
- score (from 0 to 100, where 100 is the best score).



Fig. 5.1. Statistics.

## 5 STATISTICS

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To view the results of a particular exercise, select it from the general list and tap or click on Statistics. In the pop-up menu, the results of the simulation will be displayed. Statistics is also shown after the exercise has been finished or interrupted.

Detailed score provides the total score description by parameters less penalty points.

## 6 How to watch the exercise video

If you select Advanced Settings in the window for selecting a clinical case and enable "Record video replay of exercise", a video of the exercise will be recorded.

When you exit the exercise (if you have selected "Record video replay of exercise"), the video player of the completed exercise becomes available in the program menu on the second screen.

B The following data is displayed in the top right corner of the window: the exercise name, clinical case number, level of difficulty, simulation progress and time. At the bottom of the screen, under the video display window, there is a video slider you can move to view the video from any moment.

### 7 Safety precautions

Before a session, carefully inspect the simulator and the power cable for tears, cracks, burned or scorched areas, etc. If any damage is found, wait until the failure is fixed.

B In case of burning smell, smoke or sparks, immediately stop using the simulator and inform the person responsible for safe operation.

#### YOU MUST NOT:

- Spill liquids on the simulator;



Fig. 7.1. Keep dry

- Install the simulator on the wet surface;

- Dismantle the simulator;
- Let the instrument imitators fall, be hit or otherwise damaged;
- Jump or step heavily on the two-key pedal;
- Expose the simulator to long-term high-temperature (over 40°C) exposure;
- Install the simulator on uneven, inclined, slippery or fragile surfaces;
- Leave the simulator switched on if unused.

The following symbols are found on the simulator case: "Risk of electric shock" (Fig. 7.2); "Grounding" (Fig. 7.3).



Fig. 7.2. Risk of electric shock



Fig. 7.3. Grounding

**WARNING:** The environment in the room where the simulator is located must not cause any condensation on electronic and mechanical components of the product.

Make sure simulator cables are not located in the aisle area and do not cause any danger when being moved during and after sessions.

**All instruments only imitate the real ones and must not be used outside the simulator's environment.**

## 8 Cleaning maintenance

- To clean the simulator body, use light soap solution or mildly acidic and ammonium household cleaners;
- Soak a soft cloth in the selected solution and carefully wipe dirt. протрите, удаляя видимые загрязнения;
- Do not allow the liquid leak inside the simulator. To clean the monitor screen, use special cleaning cloth;
- Do not forget to perform regular dry and wet cleaning of the facility housing the simulator;
- If heating radiators are on in the facility make sure the simulator's body is not in its proximity;
- If you are not planning to use simulator for some time turn off its power source.

