

# ANGIO

ENDOVASCULAR SIMULATOR



ANGIO-X Expert has a sophisticated and mobile design with a wheel cart and an adjustable display height; the perfect solution for training rooms and skills centers.

- ▶ ANGIO-X is suitable for radiology, cardiology and neuroradiology training. It presents the user with real endovascular instruments and an extensive modules library. The performance scoring and haptic feedback form a valuable reflection and learning system, as do the custom and editable training courses. The user-friendly touchscreen interface adds to a realistic learning and teaching experience.
- ▶ ANGIO-X offers hands-on training in a safe and controlled environment. Selection of a wide variety of endovascular instruments is presented. Haptic feedback is provided to enhance the realism of the training.
- ▶ ANGIO-X has two platforms: ANGIO-X Smart and ANGIO-X Expert. ANGIO-X Smart is the portable solution, and the ANGIO-X Expert is suitable for installment in skills centers. ANGIO-X has the most affordable modules library of endovascular procedures.



ANGIO-X Smart has a compact portable design which can easily and conveniently be placed on any table for training; the perfect solution for skills centers, workshops and seminars.

**The simulation trainer for realistic endovascular interventions**

MEDICAL X

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# ANGIO

ENDOVASCULAR SIMULATOR



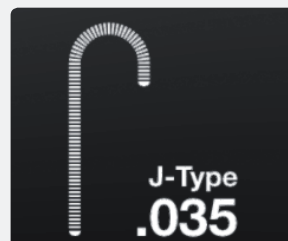
## ANGIOGRAPHY IMAGING

- ▶ X-ray with positive, negative and 3D mode
- ▶ Fluoroscopy
- ▶ Cineangiography
- ▶ DSA (Digital Subtraction Angiography) for roadmapping
- ▶ Virtual reality operating room with maneuverable C-arm and patient table



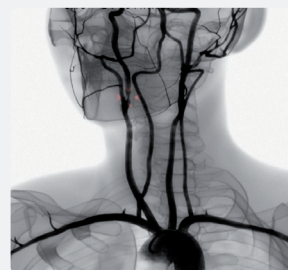
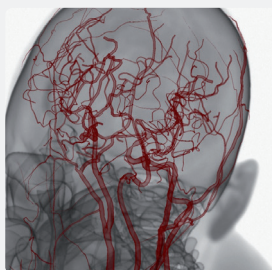
## ENDOVASCULAR INSTRUMENTS SELECTION

- ▶ Diagnostic and guiding catheter
- ▶ Diagnostic guidewire and micro guidewire
- ▶ Microcatheters
- ▶ Embolic protection devices
- ▶ Balloon dilation catheters
- ▶ Balloon-expandable and self-expanding stents
- ▶ Embolization coils
- ▶ Contrast agent injector
- ▶ Inflator



## AVAILABLE MODULES

- ▶ Carotid stenting
- ▶ Coronary stenting
- ▶ Renal stenting
- ▶ Iliac stenting
- ▶ Cerebral vessels stenting
- ▶ Intracranial aneurysm coiling
- ▶ Uterine fibroid embolization
- ▶ Endovascular basic skills
- ▶ Endovascular aneurism repair (EVAR)
- ▶ Thoracic endovascular aneurism repair (TEVAR)



## UPCOMING MODULES

- ▶ Diagnostic angiography (renal, coronary, iliac)
- ▶ Lesions below the knee
- ▶ Acute ischemic stroke
- ▶ Aortic valve implantation (TAVI)
- ▶ Left atrial appendage closure
- ▶ Transseptal puncture
- ▶ Cardiac rhythm management
- ▶ Diagnostic angiography (carotid, cerebral)
- ▶ Vascular trauma management

### Benefits at a glance:

- ▶ Work with real endovascular instruments
- ▶ Suitable for radiology, cardiology, and neuroradiology training
- ▶ Custom and editable training courses
- ▶ Instrument haptic feedback system
- ▶ Easy to transport
- ▶ User-friendly touchscreen interface
- ▶ Complete solution, ready for placement in the training room
- ▶ Adjustable display and working height
- ▶ Instrument holder

### ANGIO-X EXPERT

### ANGIO-X SMART





LAP-X II Expert has a sophisticated and mobile design with a wheel cart and an adjustable display height; the perfect solution for training rooms and skills centers.

- ▶ LAP-X II is the simulator for all minimally invasive disciplines, including but not limited to general surgery, gynecology, urology, gastro-intestinal surgery and pediatric surgery. It offers the user an extensive training curriculum with increasing levels of difficulty, allowing the learner to acquire basic laparoscopic skills to advanced laparoscopic procedure proficiency.
- ▶ LAP-X II uses unique haptic feedback technology with wireless extractable lap instruments and a laparoscope, which are interchangeable between the three universal trocars.
- ▶ LAP-X II has great flexibility; it offers individual and team training possibilities, as well as customizable training courses.



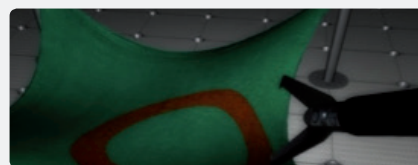
LAP-X II Smart has a compact portable design which can easily and conveniently be placed on any table for training; the perfect solution for skills centers, workshops and seminars.

**The advanced multidisciplinary  
laparoscopic trainer**

## ESSENTIAL SKILLS, SUTURING AND KNOTTING

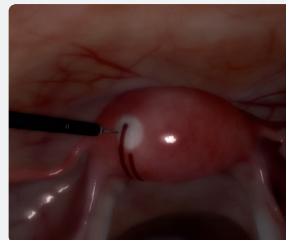
- ▶ Control of camera with different viewing angles (0°, 30°, 45°)
- ▶ Instrument coordination in space
- ▶ Vessel clipping and capturing
- ▶ Endo clip applicator handling
- ▶ Electrocoagulation operating skills
- ▶ Basic and advanced endoscopic scissor handling
- ▶ Moving and capturing of objects in space
- ▶ Movement of pins and objects
- ▶ Surgical knot tying for left/right hand
- ▶ Surgical knot tying on a thread without a needle
- ▶ Drill orientation of a needle in the needle holder
- ▶ Double knot tying on a thread without a needle

- ▶ Double knot tying for left/right hand
- ▶ Z-suturing
- ▶ Z-stitch overlaying
- ▶ Mattress suture overlaying
- ▶ Needle suturing left/right hand
- ▶ Interrupted suturing

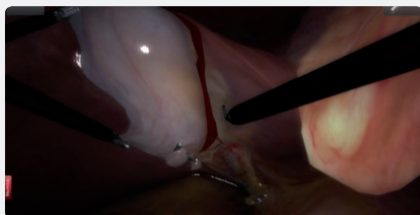


## GYNECOLOGY SURGERY

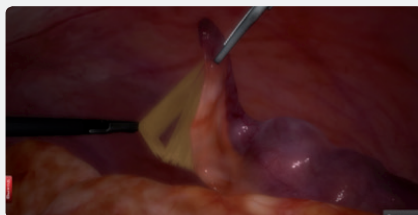
- ▶ Total laparoscopic hysterectomy
- ▶ Tubal sterilization
- ▶ Ectopic pregnancy
- ▶ Prophylactic oophorectomy



## CHOLECYSTECTOMY



## APPENDECTOMY



## BOWEL SURGERY



### Benefits at a glance:

- ▶ Work with a wide virtual range of laparoscopic instruments
- ▶ Exercise modules training for basic skills and clinical procedures
- ▶ Instrument haptic feedback system
- ▶ Easy to transport
- ▶ User-friendly touchscreen interface
- ▶ Complete solution, ready for placement in the training room
- ▶ Adjustable display and working height
- ▶ Instrument holder

### LAP-X II EXPERT



### LAP-X II SMART





# HYSTERO

SIMULATOR FOR HYSTEROSCOPY



HYSTERO-X Expert has a sophisticated and mobile design with a wheel cart and an adjustable display height; the perfect solution for training rooms and skills centers.

- ▶ HYSTERO-X is a virtual reality simulator to train essential skills and procedures in gynecology and hysteroscopy.
- ▶ HYSTERO-X is designed for teaching and training physicians in order to better and maintain their skills in realization of the hysteroscopic interventions with different clinical cases, complications, and also drug administration.
- ▶ HYSTERO-X consists of a computer image generation system in a realistic anatomical virtual 3D environment and real hysteroscopy instruments adapted for simulator use.



HYSTERO-X Smart has a compact portable design which can easily and conveniently be placed on any table for training; the perfect solution for skills centers, workshops and seminars.

**The virtual reality simulator for training hysteroscopy**

**MEDICAL** 

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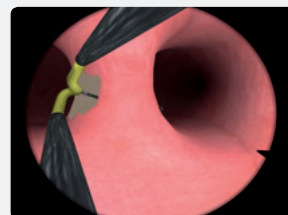
# HYSTERO

SIMULATOR FOR HYSTEROSCOPY



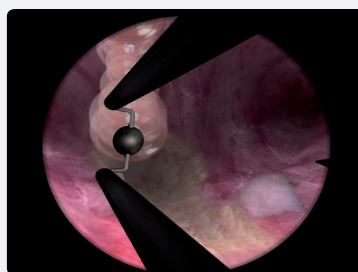
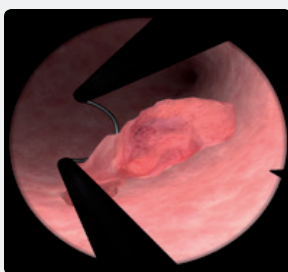
## INSTRUMENT SELECTIONS

- ▶ Hysteroscope with channel and handle for scissor or grasper
- ▶ Resectoscope with snare, ball or needle
- ▶ Camera with viewing angle of 0°, 12°, 30°
- ▶ Monopolar and bipolar instrument choice



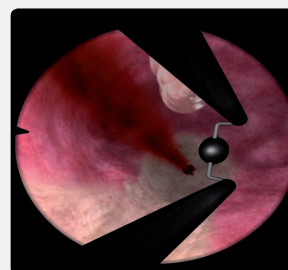
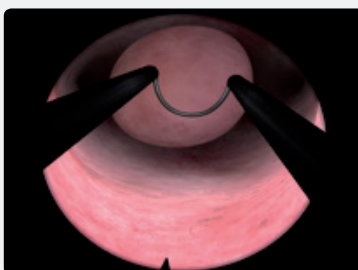
## EXERCISE MODULES

- ▶ Diagnostic hysteroscopy: 12 clinical cases of virtual patients with different kind of pathologies
- ▶ Polypectomy: 8 clinical cases with different directions and localizations
- ▶ Submucosal myomatous nodules removal: 8 clinical cases with different directions and localizations
- ▶ Endometrium ablation: 4 clinical cases of different uterine shapes
- ▶ Extended resection: 4 complicated clinical cases



## ADDITIONAL FEATURES

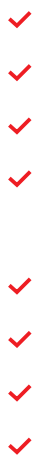
- ▶ Different assisting views: plan view, plan zoomed view, right-side view, clean image and endometrium resection indicator
- ▶ Training statistics for review
- ▶ Exercise video review
- ▶ Increasing exercise complexity levels (easy, moderate and hard) for hysteroscope visualization quality, bleeding speed, myoma and polyp size and initial bleeding occurrence



## Benefits at a glance:

- ▶ Work with a wide variety of realistic hysteroscope instruments
- ▶ Lifelike anatomical virtual reality images
- ▶ Educational review options
- ▶ Instrument haptic feedback system
- ▶ Easy to transport
- ▶ User-friendly touchscreen interface
- ▶ Complete solution, ready for placement in the training room
- ▶ Adjustable display and working height
- ▶ Instrument holder

### HYSTERO-X EXPERT



### HYSTERO-X SMART



MEDICAL 





# DENTAL

SIMULATOR FOR DENTISTRY



## Dental-X

The simulator is designed for dental students training at preclinical and clinical studying stages, manual skills in all dentistry areas improvement by medical residents, graduate students, interns, doctors, as well as assistant dentists and dental technicians as a part of specialization and certification.

| Simulator components  | Dental-X |
|---|----------|
| Gingival and teeth with different disorders plug-in modules     | ✓        |
| Different dental disorders and periodontium injuries simulation | ✓        |
| Exercises designed for basic dental care skills training        | ✓        |
| Dental crowns and dentures delivery possibility                 | ✓        |
| Work with wide range of dental instruments                      | ✓        |
| Teacher control module  | ✓        |

## Dental-X is our solution in the field of the dental intervention simulation

Dental-X simulators provide an opportunity to master dental disorder treatment basics, to apply new dental care methods, to enhance dental instruments handling practical skills, to consolidate already existing theoretical knowledge of dental intervention technologies and tactics.

Gingival and teeth module replacement makes it possible to select best suitable solution, regarding studying format and group size.



## Dental instruments

Studying seat disintegration to doctor and assistant units widen the Dentist – Assistant dentist team work training possibilities.

- ▶ Aspiration system use
- ▶ Stopping process acceleration with polymerizing lamp usage
- ▶ Certain tooth treatment process highly-precise macrography



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# ENDO X

SIMULATOR FOR ENDOSCOPY



## Endo-X Expert

The simulator is designed for gastroscopic, colonoscopic, sigmoidoscopic intervention performance skills training

### Simulator components

### Endo-X Expert

- Flexible endoscope (bronchoscope) use simulator
- Endoscopic instruments use simulation
- Wide range of clinical cases of different complexity level
- Insufflation performance simulation
- Videorecording
- Patient's respond to different intervention types simulation
- User accounts administrating possibility

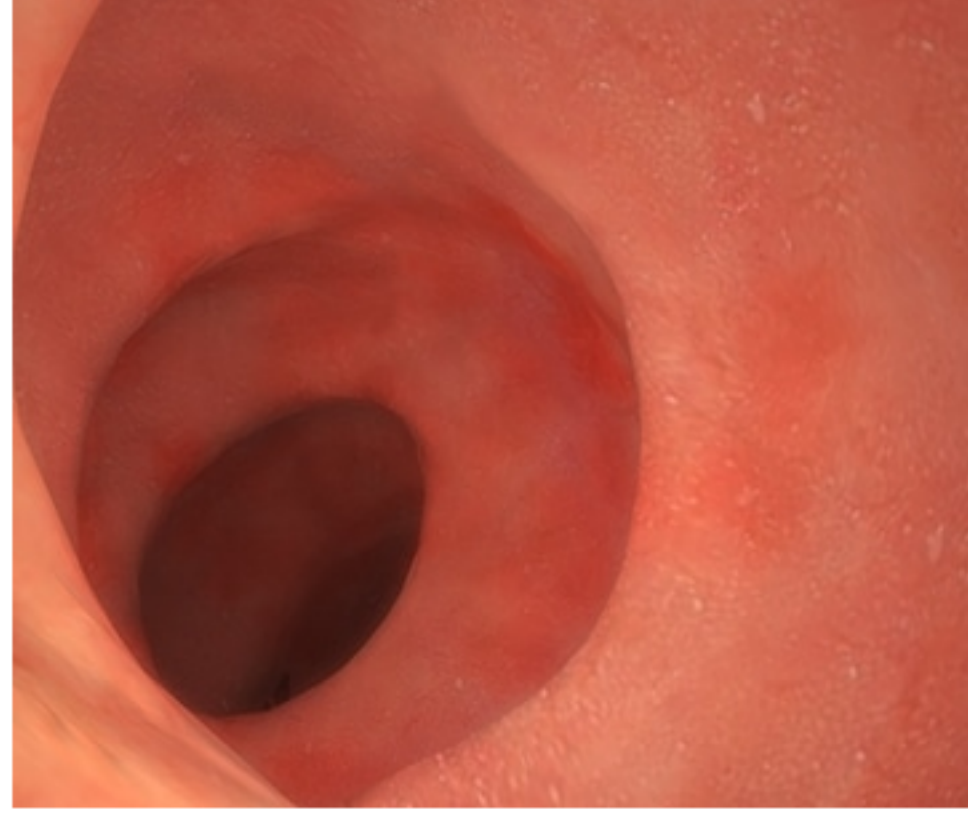


Endo-X is a handy and highly effective training system for gastroenterological interventions performance in virtual environment created on the base of real GIT anatomic structures.

The simulator precisely imitates the endoscope and endoscopic instruments handling process, diagnostics and operative interventions performance.

The simulator shows the patient's respond to the incorrect student's actions during the procedure and models the complications that should be arrested.

A student gains key skills and knowledge for a real intervention performance on successful completion of the full training course.



## Highly realistic solution

Detailed statistics according to the exercise completion effectiveness parameters

- ▶ Realistic haptic feedback of endoscope handling
- ▶ Realistic visualization of patient's GI tract anatomic picture and pathologies
- ▶ Sound responds to incorrect student's action

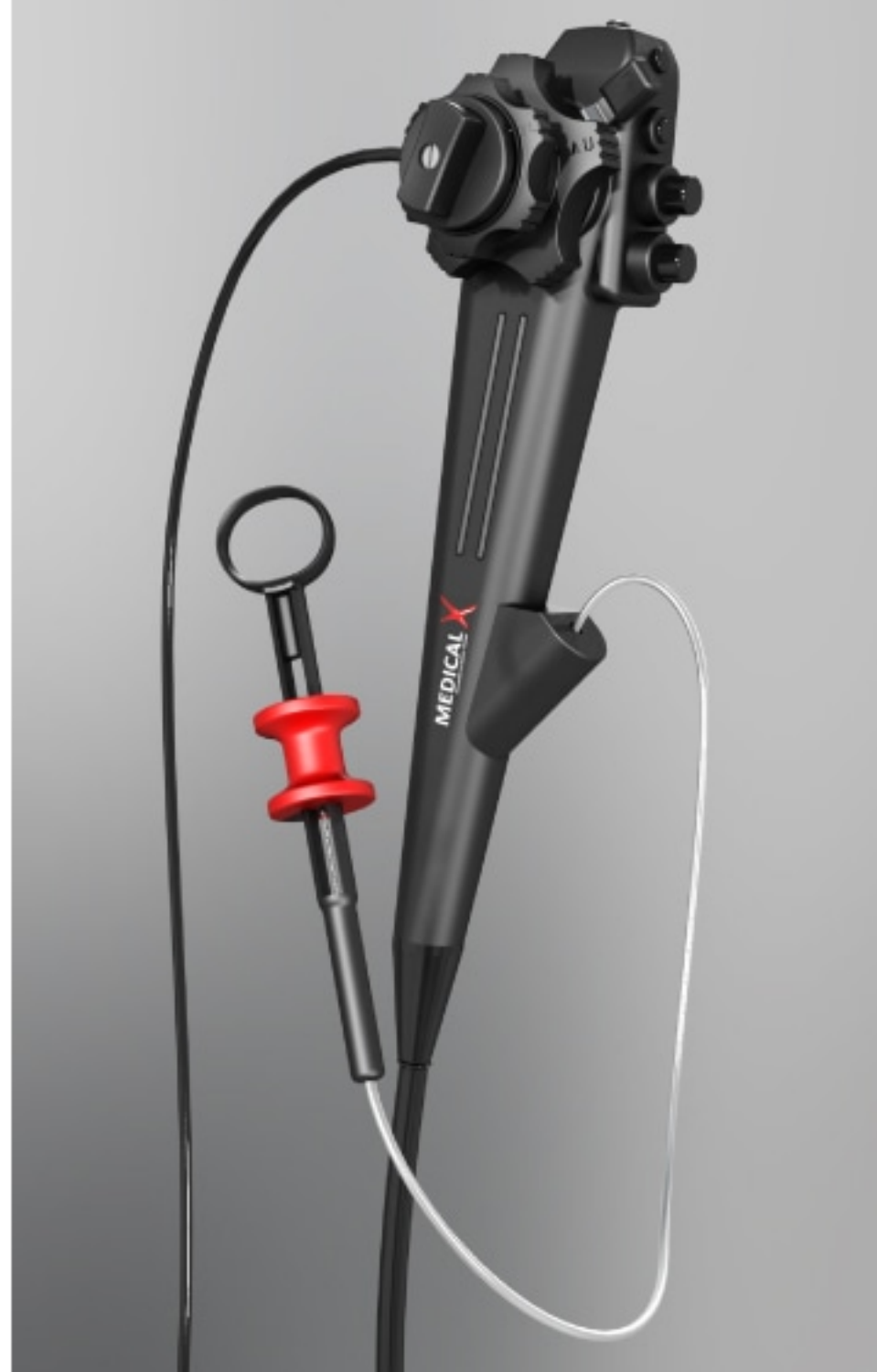
## Detailed statistics

Detailed statistics according to the exercise completion effectiveness parameters

- ▶ Over 30 parameters for procedure performance effectiveness
- ▶ Insufflation performance statistics
- ▶ Time statistics
- ▶ Used instruments statistics
- ▶ Detected and eliminated pathologies statistics
- ▶ Checkup performance percentage

## Realistic endoscopic instruments

- ▶ Biopsy forceps
- ▶ Various electrodes for coagulation
- ▶ Endoloop for polypectomy performance
- ▶ Real gastro-colonoscopy imitation



## Wide range of clinical cases

- ▶ Malignant and benign tumors
- ▶ Polyps
- ▶ Ulcers
- ▶ Over 10 clinical cases in each module
- ▶ Pathologies ranging from common to rare
- ▶ Detailed indications description
- ▶ Few pathologies in one clinical case
- ▶ Different pathologies localizations (easy/hard to access)

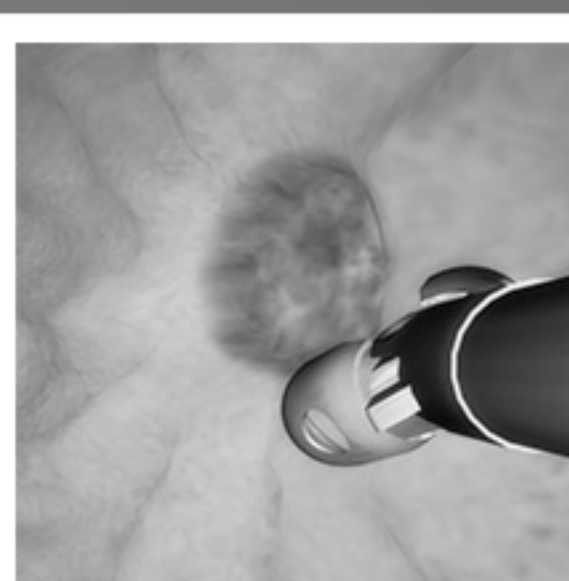
## Educational and practical modules

Simulator software automatically keeps tracks of intervention stages performed by a student during the exercise



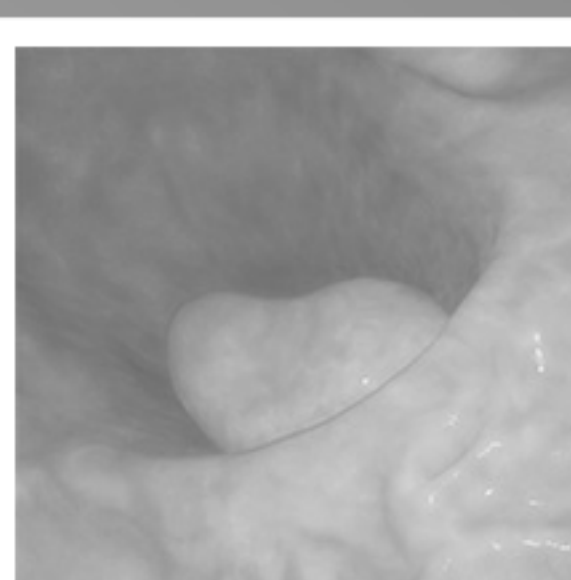
### Basic skills in endoscopy

Endoscope and endoscopic instruments handling skills training. The module includes different exercises for endoscope handling mastering



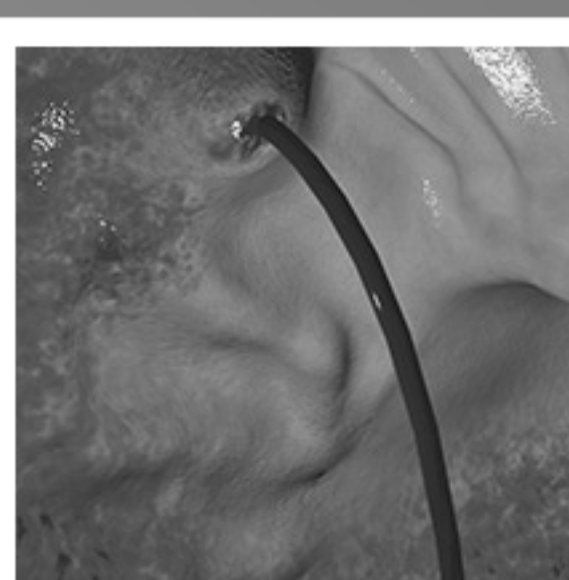
### Diagnostic gastroscopy

Diagnostic gastroscopy performance skills training. The module comprises 11 clinical cases of various pathologies of different complexity levels



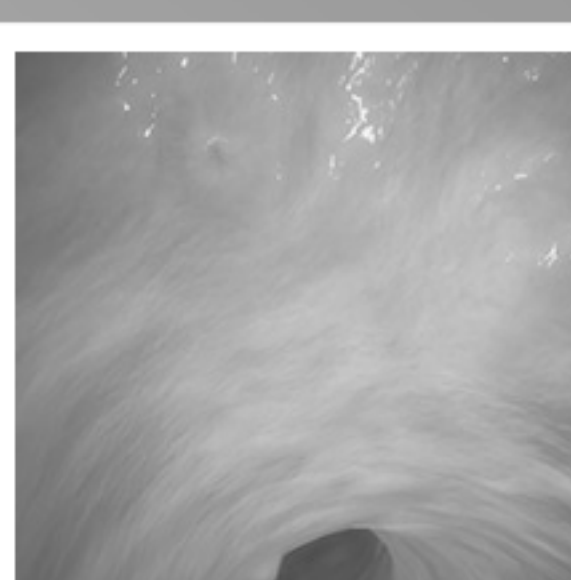
### Operative gastroscopy

Operative gastroscopy performance skills training. The module includes set of clinical cases of different complexity levels ranging from common to rare ones



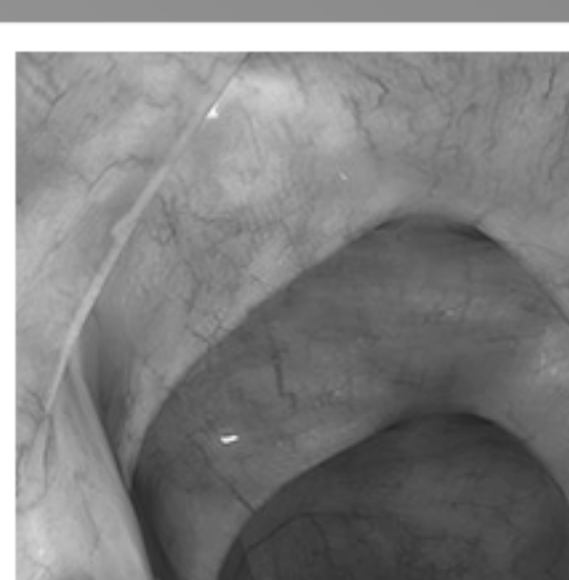
### Upper GI tract hemorrhage

Upper GI tract hemorrhage arresting performance skills training. A set of clinical cases of a different complexity level ranging from weak to profuse bleeding. Coagulation use for bleeding arresting.



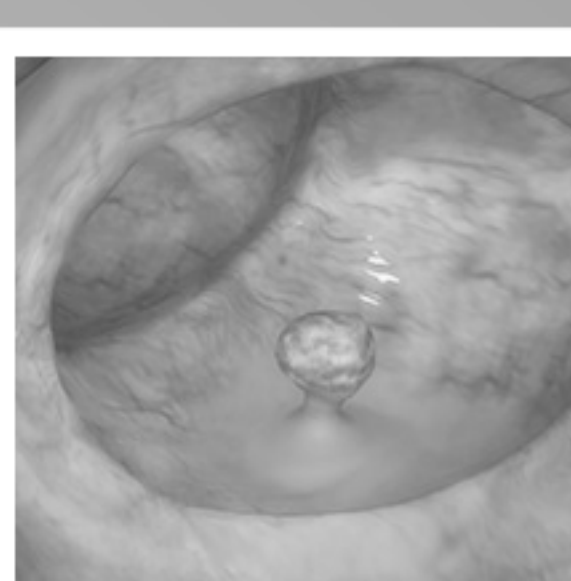
### Endoscopic retrograde cholangiopancreatography

Retrograde cholangiopancreatography performance skills training. Pathology diagnostics and biopsy sample obtaining from gallbladder, pancreas and liver.



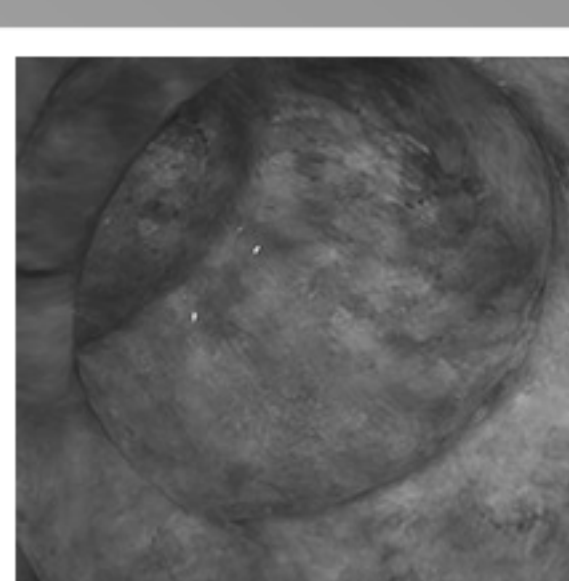
### Diagnostic colonoscopy

Diagnostic colonoscopy performance skills training. The module comprises 11 clinical cases including different intestine segments pathologies ranging from polyps to cancer.



### Operative colonoscopy

Operative colonoscopy performance skills training. The module includes set of clinical cases, pathologies diagnostics and their elimination with endoscopic instruments use.



### Sigmoidoscopy

Sigmoidoscopy performance skills training. The module includes set of clinical cases of different complexity levels ranging from common to rare ones (hemorrhoids, polyps, cancer, tumors, etc.)



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# BRONCHO

SIMULATOR FOR BRONCHOSCOPY



## Broncho-X Expert

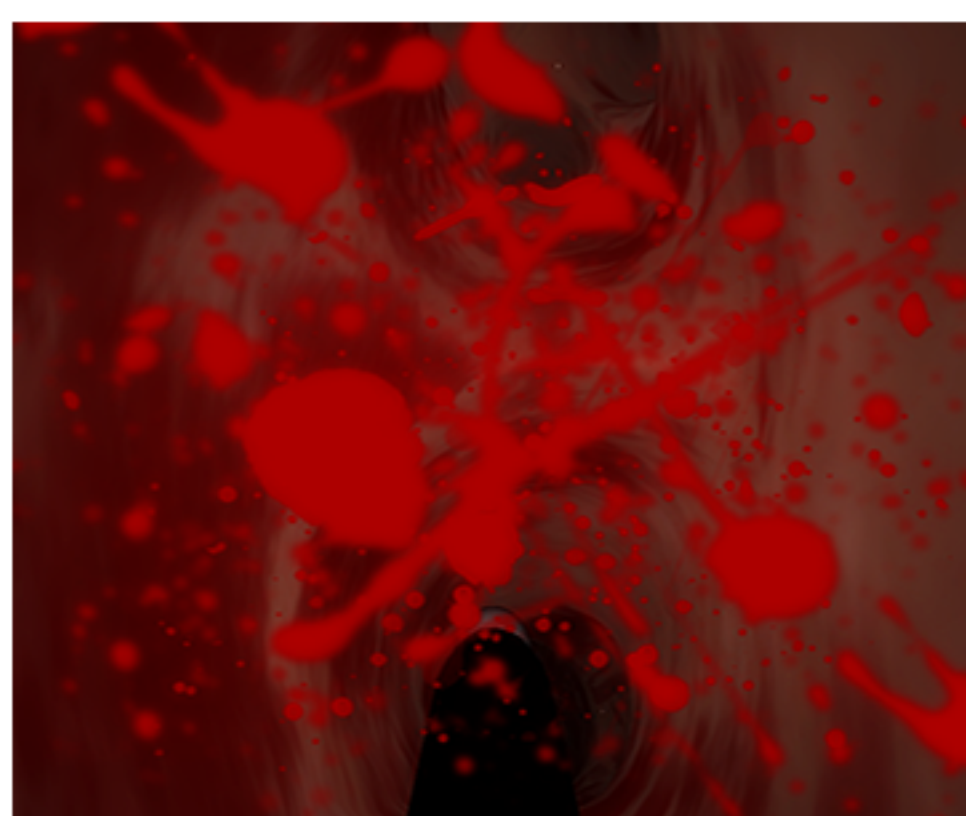
The simulator is designed for bronchoscopic intervention performance skills training

| Simulator components   | Broncho-X Expert |
|--|------------------|
| Flexible endoscope (bronchoscope) use simulator              | ✓                |
| Endoscopic instruments use simulation                        | ✓                |
| Wide range of clinical cases of different complexity level   | ✓                |
| Anesthesia performance simulation                            | ✓                |
| Intraoperative complications simulation                      | ✓                |
| Virtual tips use   | ✓                |
| Detailed statistics for each exercise                        | ✓                |
| Videorecording   | ✓                |
| Patient's respond to different intervention types simulation | ✓                |
| User accounts administrating possibility                     | ✓                |

BRONCHO-X is a handy and highly effective training system for endoscope and endoscopic instruments handling, pathology diagnostics, intervention performance skills mastering

The simulator precisely imitates the anatomical environment and clinical cases for bronchoscopy performance. The simulator is suitable for specialists of different skills and level training ranging from students to experienced doctors.

A wide range of exercises ranging from easy and common to rare and complicated ones. Each exercise includes clinical records and disease or pathology indications. A student gains key skills and knowledge for a real intervention performance on successful completion of the full training course.



## Highly realistic solution

Bronchoscopic intervention performance reality due to the audio effects, visualization and haptic feedback.

- ▶ Patient's realistic respond to the operative treatment and preoperative actions (e.g. anesthesia)
- ▶ Realistic haptic feedback of endoscope handling
- ▶ Realistic visualization of patient's anatomic picture, complications, occurring during the intervention, and pathologies
- ▶ Audio effects during sanitation, coagulation, sound responds to the careless endoscope handling or to the passing through the upper bronchial segments (cough)

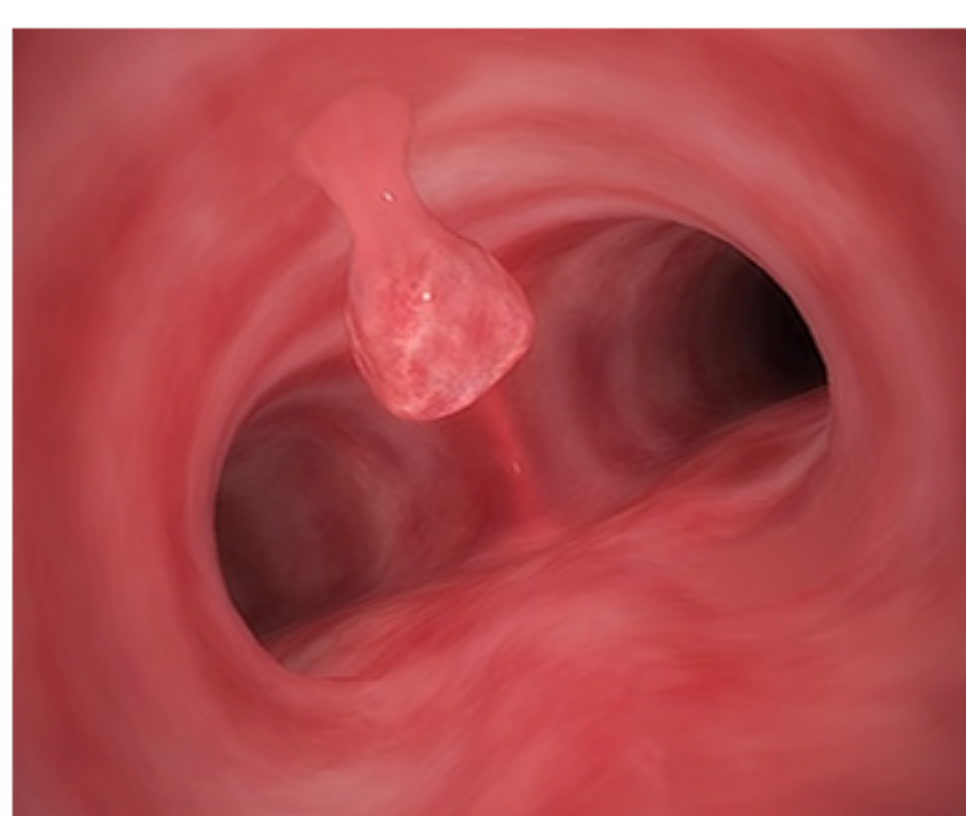
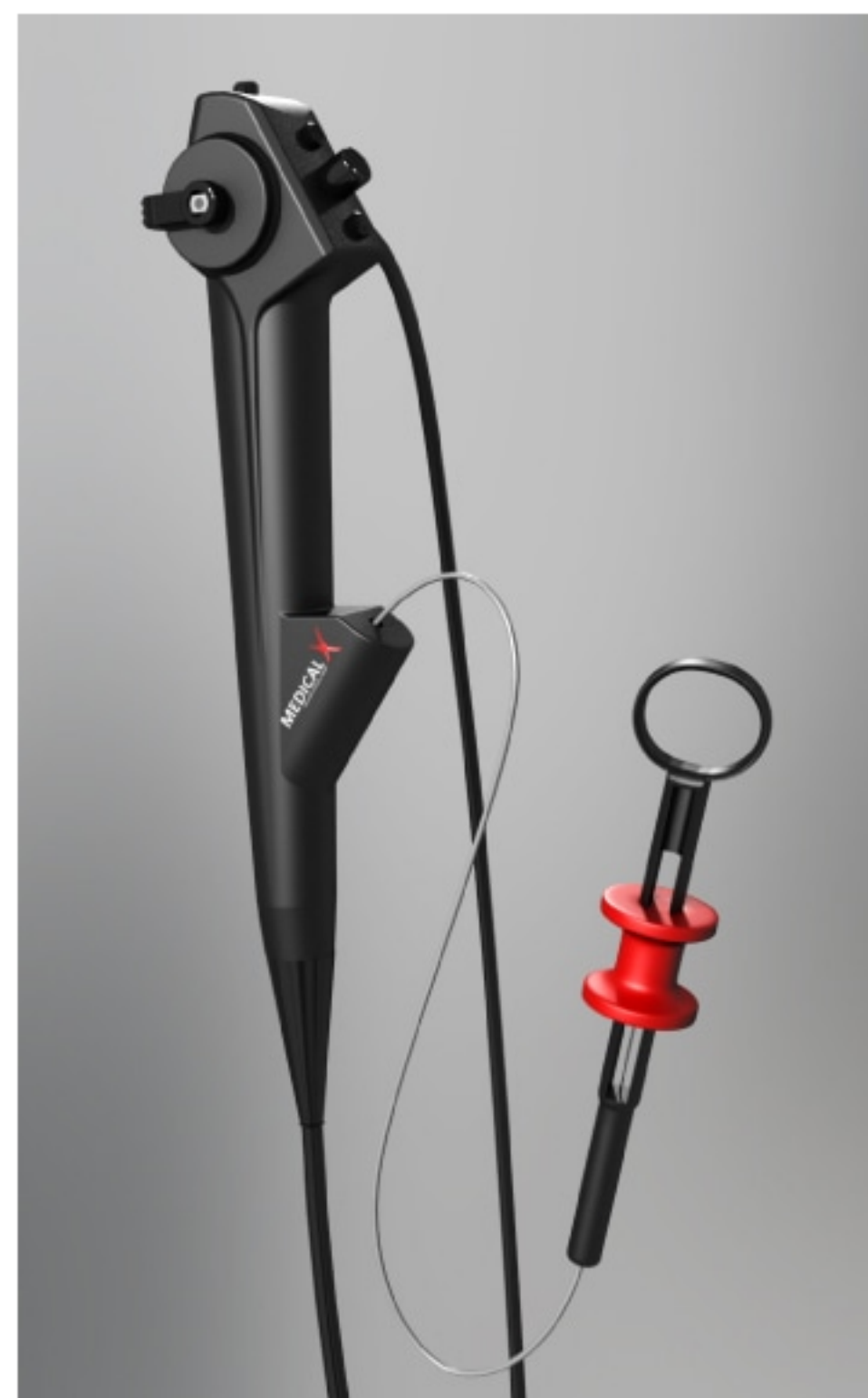
## Exercise performance evaluation comprehensive system

The system allows detailed scoring of all the exercise performance parameters

- ▶ Diagnostics or therapy performance scoring
- ▶ Penalty points for rough endoscope/endoscope instruments manipulations
- ▶ Anesthesia performance score
- ▶ Endoscope handling skills score
- ▶ Penalty points for tips use
- ▶ Penalty points for complications occurred

## Realistic endoscopic instruments

- ▶ Biopsy forceps
- ▶ Cytological brush
- ▶ Puncturing needle
- ▶ Toothed forceps
- ▶ Various electrodes for coagulation
- ▶ Endoloop for polypectomy performance
- ▶ Real bronchoscope imitation

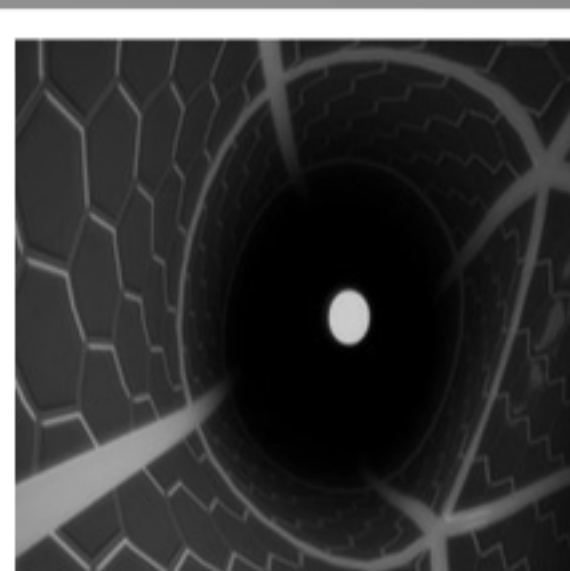


## Wide range of clinical cases

- ▶ Over 30 clinical cases
- ▶ Diagnostic and operative bronchoscopy clinical cases for an adult person presented with common and rare pathologies
- ▶ Pediatric bronchoscopy clinical cases complex
- ▶ Lymph nodes pathologies complex
- ▶ Basic skills in bronchoscopy mastering exercises set

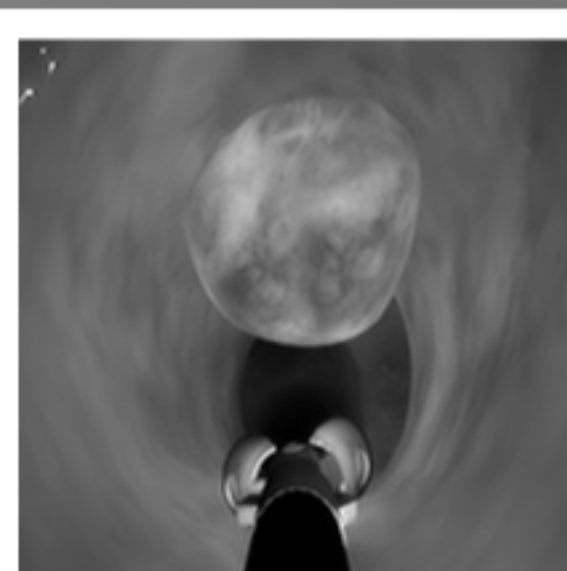
## Educational and practical modules

Simulator software automatically keeps tracks of intervention stages performed by a student during the exercise



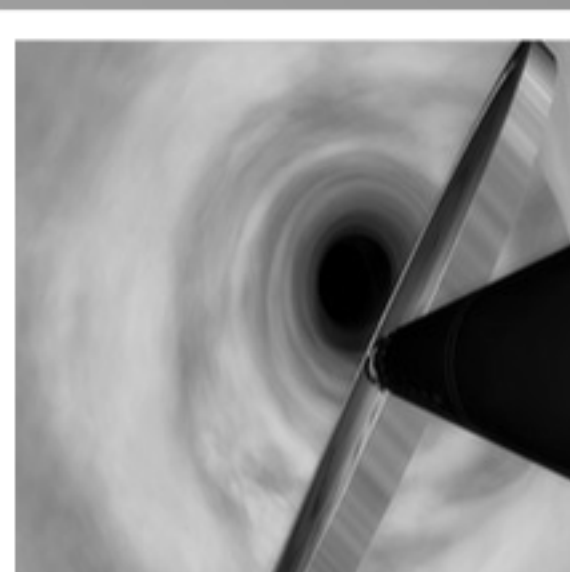
### Basic skills in bronchoscopy

The module aimed at bronchoscopy performance significant skills training. Module exercises include endoscope and endoscopic instruments handling, studying and testing of bronchi and lymph nodes anatomy.



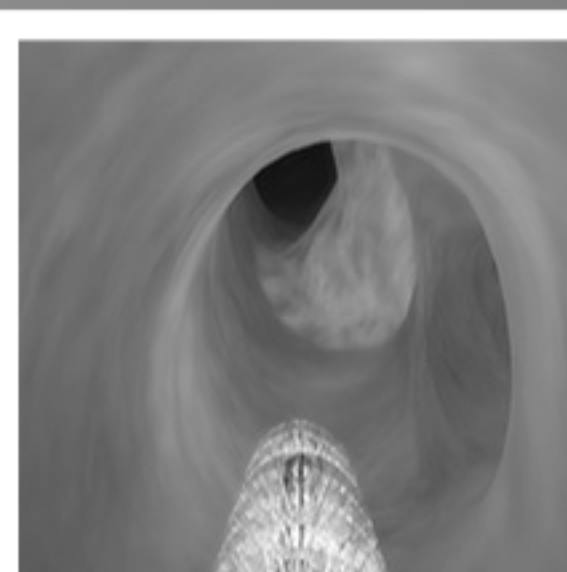
### Diagnostic bronchoscopy

Diagnostic bronchoscopy performance skills training. The module comprises exercises, aimed at biopsy sampling obtaining, checkup and photo shooting.



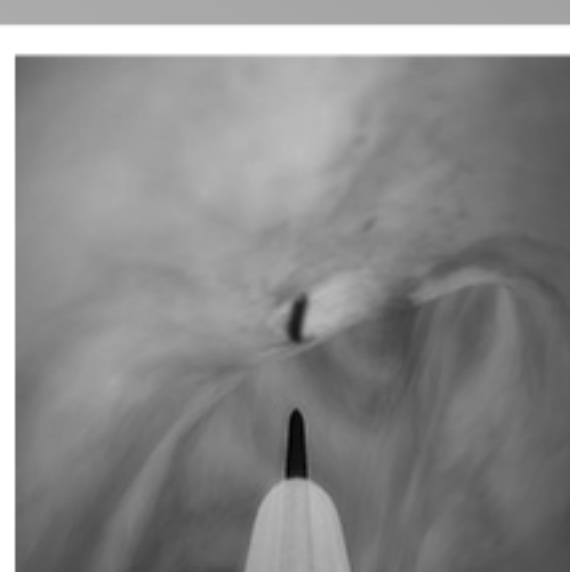
### Operative bronchoscopy

Operative bronchoscopy performance skills training. Exercises include foreign body removal from the bronchi, tumor recanalization, stenting and pulmonary hemorrhage.



### Pediatric bronchoscopy

Bronchoscopy performance for pediatric patients (ranging from an infant to a teenager) skills training. Key distinctive feature of the module is a possibility of bronchoscopy performance in anatomical bronchial environment of kids of a different age.



### TBNA

Transbronchial needle aspiration performance skills training module, comprising lymph nodes pathology clinical cases



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## ‘The most realistic baby simulator system’

Epona Medical believes that realistic simulation training is an essential step in improving healthcare. Medical professionals need to be able to put their acquired knowledge to the test, without harming real patients. Confidence, competence and experience have to be built up from realistic clinical training.

NENA Sim is born to complement realistic multidisciplinary team and/or individual baby patient simulation training. Nena Sim offers an ideal training solution for a wide range of healthcare professional including but not limited to patient care, emergency medical intervention and resuscitation training for dynamic team or individual training.

## Features

Besides being the only baby simulator that has eyes, head, limbs movement, Nena Sim can realistically simulate vocal sound (i.e crying, coughing, heart sounds) infant breathing patterns and complications, circulation feature and anatomical airway.

The realistic airway allows trainee to exercise endotracheal intubation with real clinical instruments.



*Anatomically realistic*



*Ideal training for a wide range of healthcare professionals*

## Nena Sim

The NENA Sim system consists of three components:

1. The NENA Sim baby simulator
2. The NENA Sim simulation software
3. The NENA Sim patient monitor

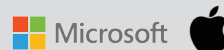
Nena sim comes with a laptop with Nena sim software to control and manage the baby simulator.

The NENA Sim simulation software has a user-friendly touchscreen interface, which allows the instructor to control the NENA Sim baby simulator movements and to configure the parameters output on the NENA Sim patient monitor for real-time training interaction.

The communication from the controller to the patient monitor and to the baby simulator is through the built in wifi. Different language settings are possible.

The NENA Sim patient monitor is a perfect tool for training baby examination. It has the following parameters output for setting up various scenarios: Blood pressure, Heart-rate, ECGs, SpO2, CO2, ABP, CVP, PAP, PCWP, NIBP and TOF. Trainees learn from monitoring the displayed parameters. It enables them to deduct the correlation between the measured values and the clinical picture of the patient.

*Compatible with both  
Microsoft Windows and MacOS*



*User friendly software with various  
setups of scenario training*

## Benefits at a glance

- Suitable for a wide range of healthcare professional
- Realistic eyes, head, and limbs movements
- Simulate various breathing pattern with different rate, depth and complications
- Playable vocal sound recordings
- Blood pressure and heart-rate set up functions
- Offer various parameters output on the patient monitor: ECGs, SpO2, CO2, ABP, CVP, PAP, PCWP, NIBP and TOF.
- Intubation through anatomical realistic airway
- User-friendly touchscreen interface allowing the instructor to input the baby movements and parameters output on the patient monitor
- Different language options



*Low maintenance with multi-function use*