







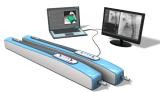




ANGIO Mentor™

A perfect endovascular training system for multiple disciplines including: Interventional Radiology, Interventional Cardiology, Vascular Surgery, Interventional Neuroradiology, Thoracic Surgery and Electrophysiology.

The ANGIO Mentor contains an ever-expanding library of procedures. The simulated environment provides more realistic, high fidelity training opportunities than any other endovascular simulator. When combined with Simbionix' innovative PROcedure Rehearsal Studio, the number and variety of available practice options are unlimited.



The ANGIO Mentor family of products provides solutions for a wide variety of training situations.

PROcedure Rehearsal Studio™

Taking preparedness for endovascular procedures to a whole new level.

This innovative technology allows clinicians to create a patient specific 3D virtual anatomical model based on patient's CT/MRI for the purpose of simulating, analyzing and evaluating for preoperative endovascular surgical treatment options.

Once patient's 3D model has been reconstructed, the physician can practice and rehearse an endovascular intervention in a true-to-life simulated environment.

The simulator simplifies procedure planning and increases confidence in real procedures. It enables storing cases with strong teaching value in the ANGIO Mentor™, creating an unlimited virtual patient library and innovative interventional curricula.

ARTHRO Mentor™

VR training simulator for knee and shoulder arthroscopic procedures.

The ARTHRO Mentor virtual reality training simulator provides practice in the key aspects of arthroscopic surgery. This simulator is an ideal addition to traditional training techniques, as it enhances the acquisition of basic skills, reduces learning time and considerably improves the learning curve of complex arthroscopic surgery techniques.

The system provides a teaching protocol comprised of a series of training modules allowing trainees interactive hands-on practice of diagnostic arthroscopy, and the chance to train on more complex surgical procedures. Training modules include Basic Skills, Diagnostic and Procedural Knee Tasks, and Diagnostic and Procedural Shoulder Tasks.

U/S Mentor™

A multidisciplinary simulator featuring highly realistic ultrasound simulation within a comprehensive educational environment.

The U/S Mentor offers a trueto-life training opportunity, including palpable mannequin and realistic anatomy, physiology and pathologies. The dynamic ultrasound display reliably portrays the anatomy per U/S probe position, incorporating sonographic imaging attributes, artifacts and controls, to best prepare the trainee for systematic scanning and informed diagnosing.

Designed to provide a solo training opportunity, the U/S Mentor offers ultrasound skill tasks and procedural tasks alongside patient cases with varying degrees of abnormalities and pathologies. Captured performance metrics combined with clinical findings report support self-assessment as well as learning curve monitoring towards competency.



LAP Mentor™

The laparoscopic simulator of choice used by leading training centers worldwide.

A complete multidisciplinary training curriculum enables new or experienced surgeons to practice everything from perfecting basic laparoscopic skills and suturing to hands-on basic and advanced laparoscopic procedures.

Used independently or integrated into training programs, the LAP Mentor has been validated as an effective and valuable training tool for improving clinical performance and enhancing patient safety.

The robust LAP Mentor design delivers tactile feedback for a realistic experience of lifting and dissecting tissue.

The desktop
LAP Mentor
Express provides
an excellent
non-haptic,
cost effective
laparoscopic
training solution.





GI Mentor™

The most advanced VR simulator for GI procedures.

Clinicians are provided with the opportunity to practice the complete range of GI procedures in a realistic environment using actual scopes. The GI Mentor's most comprehensive training curriculum covers the entire range from fundamental endoscopic skills to the most advanced procedures such as ERCP and EUS, offering over 120 tasks and cases. Performance objectives are captured, and the instructor can easily create and assign elaborate training programs, as well as manage and monitor trainees' progress.

The GI Mentor has been validated as a useful tool in advancing clinical performance, and is the GI simulator of choice used by leading societies to train and assess endoscopic skills.

The **GI Mentor Express**, a portable simulator for basic GI Endoscopy training.





BRONCH Mentor™

An innovative bronchoscopy simulator offering designated skill tasks alongside complete clinical procedures.

The simulator provides realistic simulation working with actual scope and tools, while selecting from a wide choice of supporting didactic tools and educational aids.

Designed to promote team training, the BRONCH Mentor provides the most flexible setup for both team and solo training.

Comprehensive patient monitoring and management, combined with highly reactive virtual patients exhibiting altering consciousness levels, vital signs and clinical complications enhance the bronchoscopic simulation to the full spectrum of the actual procedure.

GI-BRONCH Mentor™

The GI-BRONCH Mentor is an innovative platform combining the GI Mentor and the BRONCH Mentor to provide the most advanced virtual reality training for GI Endoscopy and Flexible Bronchoscopy.



PELVIC Mentor™

Industry first training simulator for pelvic floor repair.

The PELVIC Mentor advanced simulator is intended to prepare gynecologists and urogynecologists for pelvic floor reconstruction with an emphasis on pelvic anatomy.

This unique system was designed to allow trainees to obtain detailed knowledge of pelvic anatomy and to acquire comprehensive skills in pelvic reconstructive surgery.

The PELVIC Mentor is a strong didactic tool, enabling the trainee to receive real-time feedback while recognizing the relevant anatomical sections within the pelvis. The unique combination of the model's anatomical structure, finger sensation and virtual model provide the most effective training tool to date.



URO Mentor™

The leading VR training simulator for diagnostic and therapeutic endourology procedures.

Advanced visualization technology, realistic simulated anatomy, and a variety of scopes and tools, all make the URO Mentor the closest environment to a real procedure, with none of the risks.

Introduction to the use of endourology scopes and tools is done by working on coordination skills and essential tasks, followed by the practice of actual procedures such as stricture and stone treatment.

PERC Mentor™

The ideal training tool for practicing percutaneous puncturing skills.

The system provides hands-on training for learning how to obtain percutaneous renal access under fluoroscopic guidance using an authentic needle, with virtual patient profiles ranging from normal to obese.



VirtaMed HystSim™/ **TURPSim[™]**

Simbionix and VirtaMed have joined forces to provide a platform for hysteroscopy training and for transurethral prostate resection (TURP) and BPH treament training.

HystSim™

A comprehensive hysteroscopy training curriculum for diagnostic and therapeutic hysteroscopy. Didactic tutorials are followed by realistic hands-on experience that includes mastering instruments and managing complications. Multiple, complete hysteroscopy procedures are available to provide a range and depth of relevant pre-clinical experiences. Meaningful objective feedback completes the learning process.

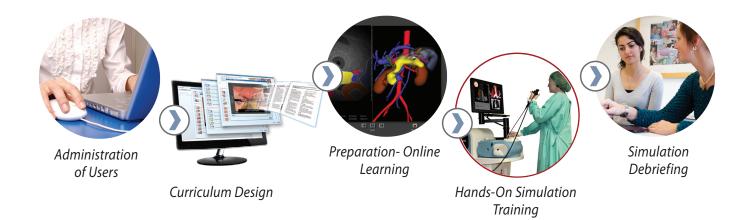
TURPSim™

feedback.

A comprehensive educational solution for TURP procedures and BPH treatment, providing didactic tutorials and training on basic resection tasks and advanced cases. A realistic hands-on experience includes knowledge of anatomy and pathology, handling instruments, and managing bleeding and complications. Debriefing

reports provide meaningful objective





EDUCATIONAL PROGRAMS

MentorLearn™

Providing What It Takes For Simulator Training To Work

MentorLearn Online facilitates structured simulation-based education by seamless integration of evidence-based simulators and extensive educational content into a web based simulator curricula management system.

MentorLearn benefits include:

- Helping training programs meet their challenge to incorporate the multidiciplinary simulators into their residency curriculum.
- Providing documentation of training for accreditation and certification - the ideal solution for the ACGME requirement for simulation based training.

The Optimal Solution With One Or More Simulators

MentorLearn Online provides a single access point to all your Simbionix simulators, of any type or number. The system allows you to:

- Perform registration and administration tasks.
- Integrate a multi-disciplinary surgical skills curriculum.
- Access aggregated performance data from all simulation training.
- Ensure the smooth operation of the center by providing the best way to keep the systems updated and serviced.

Curricula

The simulator curriculum plays an important role in the success of skill centers and in resident learning. In collaboration with key leaders in medical education and surgery provides our worldwide customers with well thought out curricula, intended to enhance learner motivation for an enjoyable, effective and efficient way of acquiring new skills using simulators.

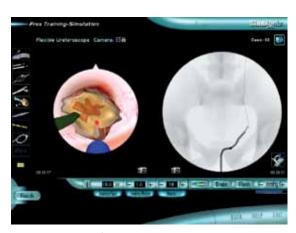
The ready-to-use curricula are provided as a structured method of training, and can serve as a template for program directors at other institutions, who can tailor the curriculum to the individual training needs. Within each curriculum, we bring forth expertderived performance as established by the authoring institution.







Practice tool manipulation under fluoroscopy



Full simulation of the endourology procedure

URO - PERC MENTOR™

Comprehensive Training for Endourology and Percutaneous Renal Access.

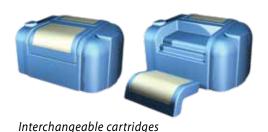
The URO - PERC Mentor combined system is a unique platform designed to provide comprehensive training platform for Endouroloy and percutaneous accessing.

Changing the Face of Endouroloy Training

The **URO Mentor™** features authentic rigid and flexible cystoscopes and ureteroscopes, provides training opportunities using a variety of actual scopes with real tool handles and enables actual insertion into working channels.

Meeting the Training Needs of Radiology and Urology Specialists

The **PERC Mentor™** add-on includes a mannequin that represents the virtual patient's torso approached from the back. Two interchangeable cartridges fitted with life-like layers of epidermis and underlying tissue combined with simulated ribs that provide the haptic perception, provide the physical system for percutaneous puncturing. The different cartridges enable practice on either normal or obese patients, and allow access to the right or left side. Two authentic needles are provided to allow for a true-to life realistic simulation.



run simulation of the endourology procedure

LIBRARY OF MODULES - URO MENTOR™





Essential Skills

Acquire essential coordination skills in a non-anatomic setting in the form of a unique game of basketball, available in two levels of difficulty. The game, CyberScopy, provides practice in handling scopes and tools, controlling and positioning the endoscopic camera, moving and positioning the C-arm, achieving depth perception and orientation, improving response time and gaining navigational confidence and skills.





Basic Tasks

Practice exercises in increasing levels of difficulty, for the systematic learning of basic tasks such as bladder and kidney inspection, as well as the full urinary collecting system anatomy, and identification of the endourological landmarks.





Full Procedure - Stone Manipulation

Train on the full endourological procedure, including simulation of an interactive C-arm, irrigation pressure and contrast material injection. Experience a variety of lithotripters and tools such as baskets, forceps, EHL, Pneumatic or Laser on a variety of virtual cases with different anatomies and pathologies.





Full Procedure - Strictures Treatment

Develop judgment and learn how to interpret and treat anatomical and operative findings in a variety of ureteral strictures. The full procedure module includes simulation of real time fluoroscopy, a variety of stricture treatments and using a flexible or rigid Ureteroscope or Cystoscope.

LIBRARY OF MODULES - PERC MENTOR™





PCN Essential Skills

Acquire the skills for performing percutaneous renal access procedures under real-time fluoroscopy in a variety of tasks in an increasing level of difficulty. A stress-free environment, using an authentic needle, allows you to gain essential skills such as processing 2D fluoroscopic radiographic images into 3D "mind's eye" visualization of anatomies, C-arm manipulation for obtaining ideal access and visualization of renal access in multiple planes.





Full Procedure- Normal Patients

Train on a variety of virtual normal weight patients with different renal anatomies and pathologies. The module provides an ideal opportunity to practice identifying the correct access to the proper calyx through a variety of access sites. Realistic hands on training is enhanced by the tactile sensations felt when maneuvering through the various layers and ribs.

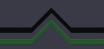




Full Procedure- Obese Patients

Practice on a variety of obese virtual patients with different renal anatomies and pathologies. Training is made possible with a designated cartridge representing the virtual patient's back and an authentic needle.





An Ever-Expanding Library of Modules

medical experts from around the world to create virtual patient cases complete with patient

histories, biological test results and imaging results, all based on actual medical data. The comprehensive library of modules provides a curriculum for the training of basic and advanced procedures, starting with general essential endoscopic skills, continuing with simple clinical procedures, and ending with challenging procedures such as ERCP and EUS. These cases are arranged hierarchically from simple diagnostic procedures to advanced therapeutic procedures. Ongoing collaboration with the medical community and in-house software development ensure the continuous growth of our Library of Modules.





Cyberscopy Module

The Cyberscopy module is aimed at optimizing the acquisition of basic GI endoscopy capabilities. Non-anatomical environments enable focusing on core endoscopic essential skills such as basic scope manipulation, hand-eye coordination and accurate maneuvering of scope and tool.

This module contains two Cyberscopy cases, each supporting two levels of difficulty.





Upper GI Endoscopy Modules

Two modules containing 20 virtual patient cases of upper GI endoscopy offer a comprehensive training environment. Practicing involves performing a complete survey of the upper GI tract with a forward viewing video-endoscope and identifying typical lesions. These cases provide the opportunity to perform the complete process of diagnosis and therapeutic treatment for diverse virtual patients, with minor to major pathologies.





Lower GI Endoscopy Modules

Two modules containing 20 virtual patient cases of lower GI endoscopy offer a comprehensive training environment. These modules enable performance of a complete survey of the lower GI tract with an authentic forward viewing video-endoscope. Trainees encounter true to life situations such as intestinal looping and complex colon anatomies, and are required to practice therapeutic procedures such as biopsy and polypectomy.





ERCP Modules

Two ERCP modules containing 20 virtual patient cases provide an advanced ERCP training environment. The ERCP modules feature a split-screen with simultaneous display of endoscopic and fluoroscopic views. A wide variety of endoscopic tools are available for therapeutic procedures such as sphincterotomy, stone extraction and stent placement. This two module set includes a designated duodenoscope for life-like simulation of ERCP procedures.





Emergency Bleeding Module

This module is comprised of 10 virtual patients exhibiting emergency hemorrhaging in the upper GI tract.

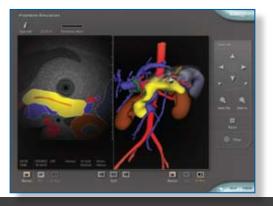
These cases require immediate treatment, using a variety of endoscopic tools and procedures. The simulated bleeding incidents are of unpredictable nature, thus helping to prepare the trainee for actual occurrences of bleeding situations.





Flexible Sigmoidoscopy Module

This module was designed to meet the need for sigmoidoscopy procedures training. The 10 virtual patient cases provide the opportunity to identify numerous pathologies, practice on difficult and unusual anatomies and gain experience with various loop reduction scenarios.



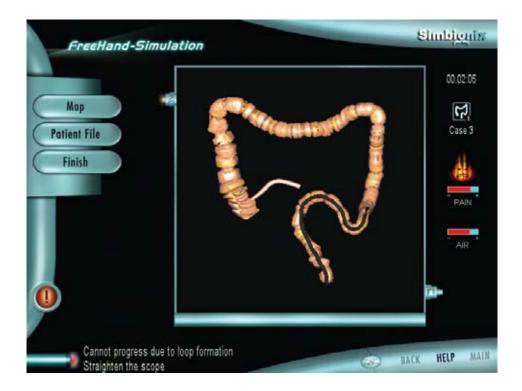


Endoscopic Ultrasonography Modules (EUS)



The unique EUS module set comprises both educational and didactic task modules to provide the ideal practice environment for endoscopic ultrasonography procedures. The user maneuvers an authentic scope to view a realistic linear or radial real-time ultrasound display. The trainee gains experience in correct scope maneuvering, interpretation of ultrasound images and landmark identification. Special visual aids such as a realistic 3D anatomical representation are at the user's disposal. Objective feedback is available for each performance.





Main Features

Educational Environment

Endoscopy trainees can take advantage of the GI Mentor's educational environment as they practice varied virtual patients. Multiple educational aids provide feedback as to scope location, state of the GI tract, problematic occurrences and patient discomfort during the procedure. Each of the educational aids can be enabled or disabled by the instructor per each trainee or virtual case.

Trainees Management and Evaluation

The GI Mentor enables the instructor to conveniently and efficiently design custom made tutorials, and assign them to selected trainees. The GI Mentor provides elaborate objective measurements and statistics for each performance, thus supporting effective trainee monitoring and evaluation by the instructor.



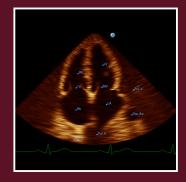




Multidisciplinary training simulator for diverse ultrasound examinations and interventions

With Sonography Basic Skills and Bedside Echocardiography Modules, the U/S Mentor combines a high level of realism with an advanced educational environment to offer:

- Realistic setup with palpable mannequin and true to life anatomy, physiology and pathologies.
- Reliable ultrasound display of anatomy per probe positions, incorporating common ultrasound imaging attributes and artifacts.
- Diverse virtual patient cases based on real patients, ranging from normal, through slightly abnormal, to distinct pathologies.
- Training to the full extent of the actual procedure, utilizing image enhancement and measurement tools, doppler, cine-loop recordings and clinical findings reporting.
- Comprehensive didactic environment supports self training and provides objective metrics.
- MentorLearn, training management platform, offers a complete user management solution, including designing curricula, online learning, and more.









GI Mentor Express

An elegant portable platform offering the most advanced GI simulation training using real scope and realistic haptic sensation.

A high end virtual reality trainer offering over 60 task and cases for endoscopy skill enhancement, colonoscopy, gastroscopy, sigmoidoscopy and gastric bleeding.

Each clinical case offers a complete clinical environment where the trainee can inspect, diagnose and treat.

Cases range from simple to complex, featuring complicated anatomies, polypectomy, gastric bleeding and more

Performance metrics validated in over 40 studies allow for self assessment and progress monitoring.

Educational environment supporting the learner in acquiring hands on experience and confidence

Offered in several configurations for enhanced flexible pricing.



ANGIO Mentor™ products provide hands-on practice in a comprehensive virtual reality simulated environment, for the following medical disciplines: Interventional Radiology, Interventional Cardiology, Electrophysiology, Vascular Surgery, Interventional Neuroradiology and Thoracic Surgery.

An Ever-Expanding Library of Modules

Supports acquiring and perfecting the skills essential to building confidence and proficiency in a variety of endovascular techniques and procedures. The simulator provides a variety of advanced procedural modules presenting over 100 unique patient cases. With the addition of Simbionix's innovative PROcedure Rehearsal Studio™, the number and variety of available practice opportunities becomes unlimited.

Incorporating Ultrasound Training (ICE & TEE)

Echocardiography is gaining more and more importance in endovascular procedures, as it provides an accurate intra-operative structural and functional assessment of cardiac structures in real time. ANGIO Mentor is the most advanced endovascular training simulator, incorporating ultrasound training and providing practice in correct use of the ICE and TEE ultrasound modalities, and interpreting the corresponding real time ultrasound images during a procedure.

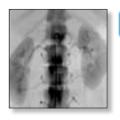
Peripherals





Carotid Intervention

All aspects of the carotid stenting procedure, including distal or proximal protection system placement, angioplasty and stenting. Complications include spasm and baroreceptor response.





Renal Intervention

Renal angioplasty and stenting procedures using either a retrograde brachial or an antegrade femoral approach.





SFA & Iliac Intervention

Complete SFA and Iliac angioplasty and stenting, using a crossover (retrograde) or an ipsilateral (antegrade) approach.





Peripheral Embolization

Multiple patient anatomies and scenarios requiring embolization, such as arterio venous fistula, hypogastric artery embolization (pre-EVAR), Type II (post-EVAR) endoleak embolization and more.



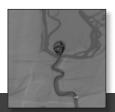


Below The Knee Intervention

Chronic Total Occlusions (CTO) in vessels below the knee. Provides several common endovascular revascularization methods, including antegrade/crossover and retrograde techniques.



Neurovascular





Cerebral Intervention

Intracranial aneurysm coil embolization and intracranial stenosis stenting, using an innovative and unique simulated bi-plane x-ray system.

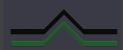




Stroke-Coming Soon

Various techniques for treatment of intracranial ischemic stroke such as mechanical clot retrieval or clot dissolving drugs. Presents various types of aortic arches





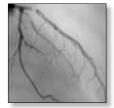
Intervetional Cardiology & Structural Heart Disease





Aortic Valve Replacement

Complete Transcathether Aortic Valve Implementation (TAVI) using femoral or subclavian approach. Complications include LV perforation.





Coronary Intervention

Cardiac catheterization procedures (PTCA and stenting), including treatment of myocardiac infarction and complications such as dissections and perforations.





ASD/PFO-Coming Soon

Complete closure of cardiac ASD/PFO defects, including balloon sizing, occluder introduction, deployment and retrieval. Complications include septum damage.

- · Ultrasound Enabled
- Dual Access





LAA Closure- Coming Soon

Complete Left Atrial Appendage Closure including standard transseptal puncture technique, access sheath placement and closure device deployment. Complications include pericardial effusion and air embolism.

Ultrasound Enabled

Electrophysiology





CRM

Placement of three electrode leads (LV, RV and RA), including real life sensing and pacing measurements. Enables clinicians to cope with procedural arrhythmia complications.





Transseptal Puncture

CS and HIS catheter placement and performance of 2 consecutive transseptal punctures. Includes life threatening complications such as pericardial effusion or aortic puncture.

- Ultrasound Enabled
- Dual Access





EP Basic Skills

Provides practice on core skills in a virtual, non anatomical environment as well as a medical (fluoroscopic) environment. Skills include correct EP catheter navigation and manipulation.



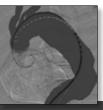




EVAR

Endovascular abdominal aortic aneurysm repair using a stent graft system and touch-up ballooning. Complications include stent graft migration and type I and III endoleaks.

Dual Access



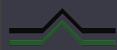


TEVAR

Thoracic endovascular aneurysm repair using a stent graft system and a stent graft balloon, presenting different sizes and locations of aneurysms and transections.

Dual Access

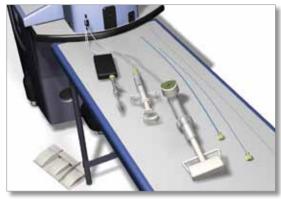




66 After extensive experience with another product and thorough research of all available options, we purchased an ANGIO MentorTM, which has lived up to our fullest expectations. It is by far the most intuitive endovascular simulator platform, has the best haptics, and clearly has the widest variety of training options. **99** Karl A. Illig, MD, Prof. of Surgery Neurosurgery, Chief, Vascular Surgery Division, Univ. of Rochester Medical Center.

Experience the sensations of performing endovascular procedures in a controlled and safe environment.







C-Arm

Variety of Interventional Instruments

Drug Panel

Angiography Suite or Cath Lab Simulation

Realistic practice of technical skills including use of a C-arm system and interventional tools. Simulation includes real-time fluoroscopy, cineangiography and digital subtraction angiography.

Enhanced Hemodynamic Monitoring and Drug Administration

Vital signs including simulation of heart rate, invasive and non-invasive blood pressure, ECG leads and oxygen saturation, accurately reflect the outcomes of interventional procedures and procedural complications. A full assortment of drugs is available for administration during the simulated procedures. The effects on the virtual patient are accurately reflected in the angiographic images and in the patient's vital signs.

Realistic Simulation of a Complete Set of Interventional Instruments

Physical properties and tactile sensations of guidewire, balloons, stents, stent grafts and other interventional devices.

Performance Metrics

A comprehensive performance report enables objective assessment of the clinician's skill level and training success, and generates extensive statistics for individual or group performance.



An advanced dynamic tool for clinical and training purposes. The revolutionary software available for CAS and EVAR procedures, allows clinicians to create a patient specific 3D anatomical model based on a patient's CT to simulate, analyze and evaluate for preoperative surgical treatment options.

Cases with strong teaching value can be stored on the ANGIO Mentor system for future training, enabling the creation of an unlimited virtual patient library and an innovative endovascular curricula.













Perform CT Scan

Generate 3D model

Practice on ANGIO Mentor

Perform actual procedure





PROcedure Rehearsal Studio SegmVMtationBenefiting Your Daily Practice

Carotid Intervention and EVAR applications are market cleared.

Ease-of-Use:

The innovative user interface makes it extremely user friendly and intuitive.

Vascular Segmentation Workstation:

Automatic segmentation and centerlines extraction of relevant vasculature from surrounding structures, identifying structures, and featuring all the standard functionality of vascular imaging and analysis workstations, including vessel views and cross-sections.



Vascular Segmentation Workstation

Maximize the Use of CT Data:

CT digital data is converted to a 3D visualization anatomical model enabling detailed evaluation.

Vessel Measurements:

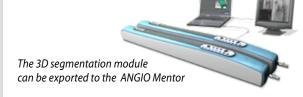
Providing the capability to precisely and easily measure vessel diameters, lengths and angulations.

PROcedure Rehearsal Studio Hands-On

Leveraging the Power of the World's Leading Endovascular Simulator

Hands-on Experience:

The ANGIO Mentor[™] allows you to practice endovascular procedures using fluoroscopy, guidewires, catheters, and other cath lab equipment to experience true-to-life tactile feedback of a real procedure.



Tailor Made Training Curriculum:

Enabling you to expand your ANGIO Mentor™ library and create a curriculum suitable to your specific needs.

PROcedure PostOp Training:

Replaying interesting procedures and difficult cases encourages group discussion, shows complications, and reinforces lessons learned.

Real-time CT images:

Corresponding to active fluoroscopic views to help you understand your patient's anatomy and to assist in effective CT interpretation and study.



CT Image Corresponding to Fluoroscopic Views

TAKING PREPAREDNESS FOR ENDOVASCULAR PROCEDURES TO A WHOLE NEW LEVEL

The Rehearsal Studio is extremely beneficial for:

- Professional Training Programs- Provides the opportunity to develop
 a specialized training curriculum that fits the needs of your training
 program. Using this unique technology allows for the inclusion of rare
 cases and complicated procedures of high teaching value into training
 programs.
- ANGIO Mentor Library of Cases- Increases the number of cases that
 can be practiced and provides the opportunity to share cases with
 strong teaching value. Provides the trainee with a great variety of
 opportunities to practice the procedures on virtual patients based on
 real cases.
- Clinical Use- Create a patient specific 3D anatomical model based on a patient's CT for preoperative analisys and evaluation for enduvascular surgical treatment.
- Debriefing- Incorporating the Rehearsal Studio into clinical routine enables an efficient platform rovides a convenient platform for group discussion and analysis after leaving the cath lab.
- Medical Device Industry- Allows the introduction of new tool developments and provides unique practice with specific interventional devices.

Available Applications (both marked cleared)

- Carotid Intervention
- Endovascular Aneurysm Repair (EVAR)

Perform CT Scan



Load your patient's CT scan into the Simbionix system and generate the 3D model



Practice on the generated 3D model



Perform the actual procedure after experiencing the simulation



VirtaMed HystSim™ - Comprehensive Hysteroscopy Curriculum

The most advanced and comprehensive training system available for diagnostic and therapeutic hysteroscopy. A complete curriculum is designed for structured integration of hysteroscopy training in OB/GYN residency programs.



Essential Skills

Each exercise focuses on one critical step of the procedure: accessing the cervix, establishing uterine distension inside the uterine cavity, navigating inside the uterine cavity, taking a proper biopsy, polyp removal and treating synechia and light cases of Asherman's syndrome. Exceptional educational aids include videos and instructions on safe procedure performance applied to the anatomical setting.



Diagnostic Hysteroscopy

Includes virtual patients with varying pathologies and cases with different levels of difficulty, allowing the trainee to gain experience in using the angled optics. Trainees practice establishing uterine distension and clear viewing conditions, confirm the correctly placed hysteroscope and learn to inspect the uterine cavity completely.



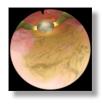
Polypectomy

Virtual patients with various polyps in different locations provide training for the first steps in operative hysteroscopy using the loop electrode. Trainees practice cutting the polyp with the cutting loop, completely removing the stalk, while preserving the healthy tissue.



Myomectomy

Includes varying types of submucosal fibroids (type 0) in different positions and different levels of difficulty. Trainees practice cutting the myoma in chips while safely handling the loop electrode and coagulating bleeding sources.



Rollerball Endometrial Ablation

Virtual patients with varying shapes of uterine cavities, in an ideal environment to practice electrosurgery in difficult to reach positions in the entire uterus. Trainees practice how to safely and systematically ablate the complete endometrial surface.



Advanced Resection

Includes various patients with advanced gynecologic pathologies intended for physicians with some experience in diagnostic and therapeutic hysteroscopy. The trainee prepares for more difficult procedures such as multiple polyps and myomas of type I and II, uterine adhesions and a septum.



Essure

Trainees experience safe and efficient placement of the Essure® micro-inserts using the original equipment. Cases include anteverted and retroverted uteri as well as various ostia configurations and handling complications such as distention difficulties, false passages and tubal resistance.



Morcellation

Virtual patients with different pathologies, ranging from small to large polyps and myomas to multiple pathologies in one uterine cavity and intramural parts of the pathology. Trainees practice removing the pathologies with the morcellator blade, correctly using the scope, the blade and the pump.



VirtaMed TURPSim™- Comprehensive Training for BPH Treatment

The most advanced training system available for transurethral resection of the prostate (TURP) and laser BPH treatment. A complete training curriculum for diagnostic and therapeutic endoscopy relies on self practice without involving live patients.

Learning Objectives:

- To develop knowledge of anatomy and landmarks
- To become proficient at using a resectoscope
- To become accustomed to the fulcrum effect and 30° angled scope
- To acquire depth perception and hand-eye coordination
- To acquire safe resection techniques
- To efficiently control and manage bleeding and complications
- Perform complete TURP procedures in a simulated environment
- Become acquainted with different laser techniques to safely perform a complete laser BPH treatment, such as vaporization, vaporesection and enucleation



TURP Basic Skills

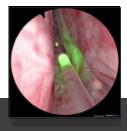
Basic tasks to acquire all skills necessary to safely perform a complete TURP procedure. The module also provides a training curriculum relying on self practice in an enjoyable environment until reaching the desired proficiency level.

Learners gain experience in identifying the anatomical landmarks, cystoscopy, performing a safe resection, and in controlling bleeding.



TURP Procedures

Cases include small to large prostates with hypertrophies of both lateral and median lobes, presenting challenges such as difficult access and heavy bleeding. Trainees practice resecting the prostate while safely handling the loop electrode, coagulating bleeding sources with the loop electrode and performing a safety inspection at the end of the procedure.



Laser BPH

Trainees learn and practice different laser techniques to safely perform a complete laser BPH treatment. Patient cases differ in the size of the prostate and in possible complications that may arise. Trainees learn to safely handle endoscope and laser fiber, perform vaporization, resection and/or enucleation of the different lobes, control bleeding during the procedure and manage complications with confidence.





Educational Features







TURPSim Simulation

Hands-On Simulation Training

Basic training tasks provide initial hands-on experience before proceeding to hands-on complete procedures in a variety of interventional techniques at a range of difficulty levels. Photorealistic simulation presents an engaging learning experience.



Didactic Tutorials with Expert Performance Videos

Didactic Tutorials

Introduce and explain "best practice" in core procedural techniques.



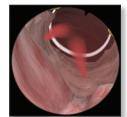
HystSim Myomectomy



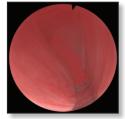
HystSim Bleeding and Perforation

Mastering Instruments and Managing Complications

Work with adapted original scopes to facilitate familiarization with instruments.



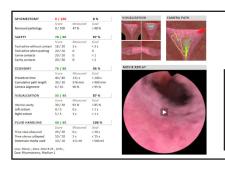
TURPSim Cutting



TURPSim Heavy Bleeding

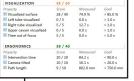
Hands-On Complication Training

Performing a safe and effective procedure while efficiently controlling and managing bleeding and complications.



Feedback Reports

Meaningful and useful objective feedback completes the learning process and facilitates training to proficiency.





HystSim Integrated in a Hands-On Training Course



The Mentor™ is a state-of-the-art laparoscopic training system that stands out amongst available laparoscopic surgical simulators by providing a complete training solution to learners of all levels and across all disciplines including gynecology, urology and general surgery.

Simulator of choice at leading training centers worldwide

- Developed in close collaboration with the medical community.
- Didactic content includes anatomical 3D maps, video-based education, procedural instructions and more.
- The only virtual reality training simulator for both basic and advanced laparoscopic procedures.
- Ever-expanding multidisciplinary library of modules.
- Ready-to-use curricula for a structured method of training that can be tailored to training needs.
- Technical skills reporting and assessment.
- The only laparoscopic simulator completely integrated online.
- LAP Mentor is the ideal solution for the ACGME requirement for simulation based training.







The LAP Mentor Express at the Laparoscopic Training Center, Zurich, Switzerland

Surgeons demonstrate LAP Mentor effectiveness in basic and advanced skill acquisition:

A prospective randomized controlled study performed on the LAP Mentor indicates that simulator-based training of camera navigation can be transferred to the OR and is more time efficient than traditional teaching. Franzeck et al., Surg Endosc. 2012 Jan; 26(1): 235-41.

"There was an excellent correlation between performance on almost all LAP Mentor tasks and FLS score." Greco et al, In Canadian Association of General Surgeons Annual Meeting, September 2008.

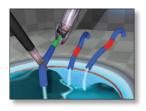
A complete surgical procedure VR training curriculum for laparoscopic cholecystectomy was defined using structured scientific methodology. Darzi et al, British Journal of Surgery 2009; 96: 1086–1093.

The only system demonstrated to be effective for advanced bariatric surgical training and assessment. Lewis et al, Surgery. 2012 Jun; 151(6): 779-84.

Warm-up exercises on the LAP Mentor improve performance of senior-level trainees during laparoscopic renal surgery. Lee et al, J Endourol. 2012 May; 26(5): 545-50.

THE LAP MENTOR CURRICULUM

TASKS AND SKILLS MODULES:





Laparoscopic Basic Skills

Acquire basic-level skills essential to building confidence and ease with laparoscopic techniques. Exercises in a non-anatomic setting provide a relaxed environment outside of the operating room aimed at improving orientation, eye hand coordination and manual skills.





Essential Tasks

Practice three essential tasks: peg transfer, pattern cutting and placement of ligating loop, similar to the Fundamentals of Laparoscopic Surgery Program (FLS) developed by SAGES. An efficient and enjoyable environment motivates practicing the tasks repetitively and independently until reaching the desired proficiency level.





Basic and Advanced Suturing

Train until proficient at intracorporeal suturing and knotting techniques for all fields of laparoscopic surgery. Suturing basic skills include needle loading, needle insertion, knot tying, interrupted and continuous suture. Advanced tasks include practicing 'backhand' technique and suturing in difficult suture line angles. Step-by-step guidance greatly enhances the training process. Real suturing handles are provided to enable realistic training.

PROCEDURE MODULES:





Procedural Tasks - Lap Chole

Focus on critical procedure steps: achieving the critical view of the cystic duct and artery, safe clipping and cutting and dissection of the gallbladder from the liver bed. Practice identifying the visual cues associated with traction/counter-traction of tissue, as well as identifying areas requiring additional practice.





Lap Chole

Experience performing true-to-life laparoscopic cholecystectomy. The module provides patient cases of easy to difficult anatomical variations to the cystic duct and positions of arteries, which may otherwise not be experienced during a training period. The module enables practicing alternative approaches, and acquisition of the skills and knowledge necessary to safely cope with possible pitfalls and complications.





Appendectomy

Acquire skills and knowledge of key components of the Appendectomy procedure: exposure of the appendix; division of the mesoappendix and appendix; specimen retrieval and control of hemostasis. The module enables practicing a variety of techniques and appropriate use of surgical instruments.





Incisional Hernia

Gain an in-depth understanding of abdominal anatomy, skills for carefully separating the adhesion to expose the hernia defect and appreciation of potential complications. Practice safe use of prosthetic mesh and devices used to fixate, suture and staple the mesh.





Bariatric - Gastric Bypass

Practice creation of the gastric pouch, measurement and division of the jejunum, gastrojejunal anastomosis and enteroenterostomy anastomosis. Practice laparoscopic Roux-en Y creation and jejunojejunostomy, and gain an in-depth understanding of intra-operative problems during lap bypass surgery and how to avoid them.





Colorectal - Sigmoidectomy

Practice real-time clinical decision-making from vessel isolation through creation of the anastomosis, and work safely to prevent complications and respond to injuries.





Urology - Nephrectomy

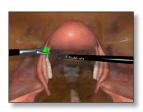
Complete a laparoscopic nephrectomy procedure safely and efficiently, including colon mobilization, exposure and dissection of the renal hilum and mobilization of the upper pole. Make the decision to spare or remove the adrenal.





Essential Gynecology

Practice fundamental GYN procedures and encounter a range of patient pathologies in: Laparoscopic tubal sterilization, salpingostomy, salpingectomy and salpingo-oophorectomy. Included in this module are various complications and emergency situations such as bleeding at the implantation site, a ruptured fallopian tube and a blood-filled abdominal cavity.





Advanced Gynecology - Hysterectomy

Practice the key components of the Total Laparoscopic Hysterectomy procedure: uterine manipulation; ureters identification; superior pedicles division; bladder mobilization; exposure and division of the uterine artery and colpotomy.





PROVIDING WHAT IT TAKES FOR SIMULATOR TRAINING TO WORK

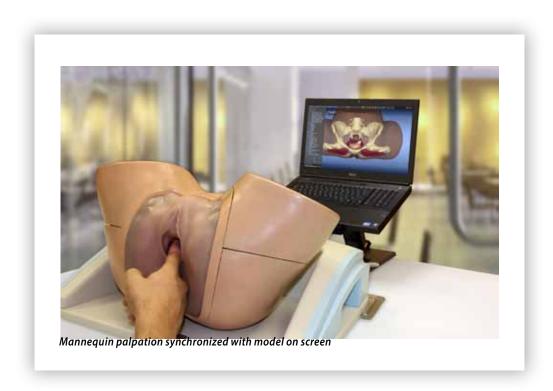
MentorLearn Online facilitates structured simulation based education, with the goal of helping surgical training programs with their challenge to incorporate the simulators into the residency curriculum. This is provided by seamlessly integrating Simbionix evidence-based simulators into a web based multidiciplinary Simulator Curricula Management System.



- Step 1 Easy and efficient administration of simulator users
- Step 2 Simulator curriculum incorporating simulation training and didactics
- Step 3 Preparation and online learning courses and video-based content
- Step 4 Hands-on training
- Step 5 Simulator debriefing with complete performance reports

The PELVIC Mentor™ advanced simulator helps prepare gynecologists and urogynecologists for basic and advanced pelvic floor procedures and pelvic exams.

This unique system was designed to allow trainees to obtain detailed knowledge of pelvic anatomy and to acquire comprehensive skills in pelvic reconstructive surgery for pelvic organ prolapse and urinary incontinence to enhance patient safety.



The unique combination of the model's anatomical structure, finger sensation and virtual model provide the most effective training tool to date.

The Pelvic Mentor's innovative concept utilizes numerous external sensors that are either embedded inside a medical device or clad on the trainee's finger. These sensors, combined with the mannequin and the 3D picture, enable the trainee to obtain a real-time indication of the finger palpation or device manipulation on virtual anatomical structures.

The PELVIC Mentor™ - A Strong Didactic Tool

MentorLearn™ is a web based Simulator Curricula Management System, providing the optimal solution for managing training and education needs for the line of simulators.

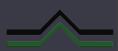
The unique combination of the PELVIC Mentor components with the Simbionix MentorLearn management system enables the trainee to receive real-time feedback while recognizing the anatomical sections and manipulating the relevant medical device within the pelvis cavity.

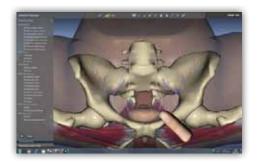
The MentorLearn system provides a full performance report on the progress and level of the trainee.



This easy to use system facilitates performing the administrative tasks of a simulator-based curriculum and running a training course or workshop, and includes a library of ready-to-use simulator based courses and a platform to design new training courses.







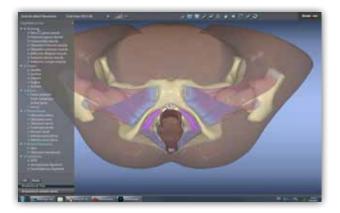
Anatomical Recognition Module

The innovative patent pending training system provides learners with the opportunity to virtually experience pelvis related procedures interactively for the first time. The system allows the user to palpate the anatomical mannequin in the same way it is done on live patients. Highly realistic anatomical mannequin provides an accurate and realistic palpation sensation, both in terms of anatomical structure and materials texture. All steps performed in the mannequin are presented on the screen in real time.

PELVIC Mentor didactic tools enable learning anatomical recognition and obtaining the skills necessary to perform pelvic procedures in a structured didactic manner. Didactic tools



Anatomical labeling system
Dynamic labels appear on the
screen next to the palpated
organ.



Automatic organ recognition
Requested organs are identified on
the virtual model.

Pelvic Exam Module - Coming Soon

This revolutionary module is an industry first computerized simulation system, intended to prepare gynecologists, medical students, nurses and midwives for pelvic exams with an emphasis on:

Bi-manual examinations Pelvimetry





BRONCH Mentor™ offers various practice opportunities including both Educational and Clinical modules. All clinical module cases feature altering procedure scenarios each time a case is practiced, thanks to a reactive patient environment comprised of virtual patient characteristics, user actions and a random factor.

The BRONCH Mentor™ Modules

The BRONCH Mentor training curriculum is being developed in collaboration with medical experts from around the world. The simulator offers various practice opportunities starting with essential skill tasks, through full clinical procedures of elective or emergency nature, and complete with new clinical procedures such as EBUS.



Essential Bronchoscopy Module

Designated skill tasks to optimize user's learning curve while acquiring and integrating bronchoscopic capabilities. Required skills such as scope control, 3D cognitive perception, detailed anatomical knowledge and correct bronchoscopic tool activationare incorporated in this module, aimed at driving adoption of correct working habits towards safe and efficient clinical performance. This module is being developed in conjunction with and endorsed by the American Association for Bronchology and Interventional Pulmonology (AABIP).



Diagnostic Bronchoscopy Module

Diagnostic bronchoscopies including visual inspection and various methods for tissue sampling. Utilizing biopsy forceps, cytology brush, aspiration needle and bronchi alveolar lavage, for different clinical scenarios where endobronchial or transbronchial sample obtaining is required.

Controlling and maintaining patient's condition throughout the procedure is mandatory, including: moderate sedation and topical anesthesia, vital signs and level of consciousness monitoring, and optional oxygen supplement.

Reactive complications such as hemodynamic complications, risk of pneumothorax or breathing suppression are to be avoided or solved upon occurrence.



Emergency Bronchoscopy Module

Identifying and solving emergency and ICU situations requiring bronchoscopic intervention such as foreign object aspiration, hemoptysis or mucus plugs. Bronchoscopic tools such as grasping forceps, basket, balloon, electrocautery probes and more are at the trainee's disposal.

Controlling and maintaining the patient's condition throughout the procedure is mandatory, while avoiding reactive complications, such as pneumothorax, bleeding, hypoxemia, hypotension, arrhythmia and more, or attending to complication upon occurrence.



Essential EBUS Module

Designated tasks and complete clinical procedures are incorporated in this new module. Performing the tasks, trainee has the opportunity to enhance understanding of the ultrasound image, acknowledge the interrelations of lymph node stations and relevant structures (under the IASLC map, 2009), and learn and practice the correct workflow of complete EBUS-TBNA sampling using an actual needle with all of its functionality.

The virtual patient cases provide a comprehensive patient environment. Various ultrasound controls are available, as well as educational aids and supporting displays. A corresponding external display, CT scans, tutorial movies, labels, real time guidance, doppler, depth change and more are at the trainee's disposal.

Performance metrics regarding safety, efficacy and diagnostic results are available

following each performance completion

A Comprehensive Educational Environment

The educational environment features skill targeted tasks, educational aids enhancing anatomical knowledge, supporting external visualizations, contextual warnings and immediate performance feedback. All features unite to provide an efficient and beneficial trainee oriented practice experience.

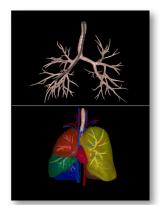


Presenting the most realistic virtual patients including breathing, coughing, altering consciousness level, reactive vital signs, bleeding and breathing suppression; Within the most comprehensive clinical environment incorporating moderate sedation and topical anesthesia, oxygen supplement and hemodynamic complications.

The BRONCH Mentor™ is the only virtual reality trainer enhancing the bronchoscopic simulation to the full spectrum of the actual procedure.



Features and Benefits



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Educational Aids:

Various educational aids and didactic materials are aimed at optimizing bronchoscopic skills acquisition, better understanding the anatomical environment, increasing the efficacy of clinical procedures performance, and improving patient safety while performing.

Realistic simulation:

Using an authentic scope, within a true-to-life comprehensive patient environment, supports acquisition of the full spectrum of skills required for a good bronchoscopist. Practicing on the BRONCH Mentor provides the trainee with the opportunity to refine his capabilities and become an intuitive, natural bronchoscopist.

Performance Metrics and Trainee Management:

Multiple performance metrics are captured and saved during each performance, allowing for progress assessment by both the trainee and instructor. The instructor has the opportunity to closely monitor trainee's objective performance and improvement over time, as well as assigning specific tasks, cases or structured training courses to selected trainees or groups.

Flexible Setup and Team Training Opportunity:

The flexible setup facilitates posterior or lateral working positions, oral or nasal scope introduction and an aided or 'procedure restricted' simulation environment. This innovative platform was designed to support both solo and team training.

With its 24" touch screen, the ongoing patient sedating and monitoring, and the actual peripherals – the BRONCH Mentor encourages training of the whole Bronch Suite team, to practice their unique roles in an orchestrated performance.

VR Training Simulator for Knee and Shoulder Arthroscopic Procedures

The ARTHRO Mentor™ is a virtual reality training simulator for the practice of key aspects of arthroscopic surgery. Studies show that this simulator is an ideal addition to traditional training techniques, as it enhances the acquisition of basic skills, reduces learning time and considerably improves the learning curve of complex arthroscopic surgery techniques.

Simulator platform includes:

- Detailed realistic anatomical models of both shoulder and knee.
- Haptic device allowing tactile feeling of tissue resistance.
- Physical instruments (camera, grasper and stylus) simulating real tools, each including a number of virtual tools that are used in the various cases.

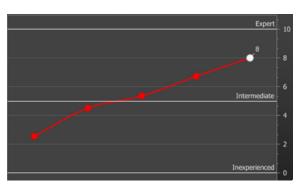
Skills assessment

At the end of each session the system provides a set of performance metrics for the objective assessment of skills development and the learning process.

Skill evaluation includes:

- Global score.
- Distance covered for camera and instruments.
- Excercise completion time.
- Smoothness and efficiency of movements.

Detailed reports are produced based on the information collected during training, showing either performance of individual users, or data for complete course participants. The detailed scoring system evaluates skill level based on a number of customizable and easily modifiable parameters, allowing for each institution to set their own criteria.



Skills Assessment Metrics



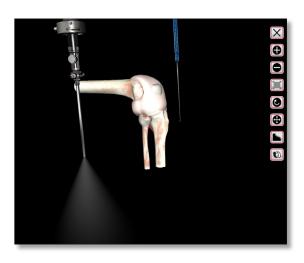
Modules

ARTHRO Mentor provides a realistic and accurate training solution comprised of a series of training modules allowing trainees interactive hands-on practice of basic skills, diagnostic arthroscopy and the chance to train on more complex surgical procedures on both healthy anatomies and those with various pathologies.

Basic skills module

Enabels training on the basic tasks and skills necessary to perform safe arthroscopic procedures:

- Anatomical structures identification.
- Navigation skills.
- Triangulation / depth perception.
- Instrument handling skills.



Knee module

Allows exploration of the knee joint in both healthy and pathological models, as well as provides a set of key steps for surgical procedures. Knee module includes diagnostic tasks alongside procedural knee arthroscopy cases.

Diagnostic Knee Arthroscopy Tasks:

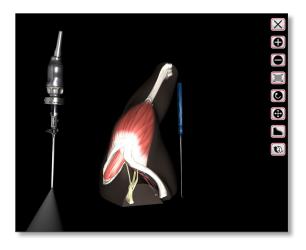
Joint examination Flap tear
Longitudinal tear Radial tear

Pathology diagnosis Bucket handle tear Horizontal tear Parrot peak tear

Procedural Knee Arthroscopy Cases:

ACL repair Microfractures

Menisectomy Loose body removal



Shoulder module

Provides trainees with the opportunity to learn the correct exploration technique of the glenohumeral joint and the subacromial space, in both healthy and pathological models. Shoulder module contains both diagnostic tasks and procedural cases.

Diagnostic Shoulder Arthroscopy Tasks:

Glenhumeral examination Subacromial examination

L/C – Shape RC tear Impingement

Anterior and posterior Bankart SLAP

Cartilage lesion Buford complex
Sublabaral hole Pathology diagnosis

Procedural Shoulder Arthroscopy cases:

ASD Micro fracture
RCR Loose body removal
Instability Suture handling





MENTORLEARN SIMULATOR CURRICULA MANAGEMENT

PROVIDING WHAT IT TAKES FOR SIMULATOR TRAINING TO WORK

MentorLearn Online facilitates structured simulation-based education by seamless integration of evidence-based simulators and extensive educational content into a web based simulator curricula management system.

- Helping training programs meet their challenge to incorporate the multidiciplinary simulators into their residency curriculum.
- Providing documentation of training for accreditation and certification the ideal solution for the ACGME requirement for simulation based training.



Perform administrative tasks including tailoring an environment to match individual and group training needs, to allow a more engaging user experience for both educators and learners.

- User & group management creation, customization and management of learners and groups parallel to your real-world organizational structure.
- Easy enrollment allows adding users automatically or from file, or having students enroll themselves to save time in the set up process.
- Modern interface designed with ease of use in mind.
- Service and support using MentorLearn Online is the best way to ensure your simulator is up-to-date with the latest software enhancements and receives the best service and support.

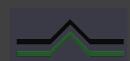


CURRICULUM DESIGN

Make the best use of your simulators by following the components of a successful skills curriculum, leading to an effective and efficient way of acomplishing simulator-acquired skills and to a superior learning experience.

- Cognitive components include didactic sessions and video-based education.
- **Deliberate, goal-oriented training** essential for performance improvement.
- A library of ready-to-use simulation training curricula developed by experienced centers serves as a key resource.
- Ability to design your own curriculum provides the flexibility to customize the curriculum to your needs.
- Sensitive performance metrics allow instructors to provide feedback and debriefing.







Skills Lab Administrators

Managing your simulator users has never been an easier experience: Perform the tasks of simulator user management in a modern up-to-date interface; Create an organizational structure of learners and groups tailored to match individual and group training needs.



Course Directors

Integration of simulators in core curricula is performed with more ease and saves faculty time. A library of ready-to-use simulator based courses is provided as reference and a platform to design new training curricula helps you automate and standardize your existing educational design.

Follow trainee progress and perform debriefing through use of advanced reports.



Learners

An online, single point of access for courses, video-based education, evidence-based simulator training and simulator debriefing results in an engaging learning experience and makes better use of time in the simulation lab.



(3)

PREPARATION - ONLINE LEARNING

Provide the learning components for the participants to review online, prior to training on simulators, allowing the simulator users to arrive more prepared and making better use of time in the simulation lab.

- Learning objectives provided for each module follow the standard framework in surgical education.
- Video based education and reading material improve knowledge and put the manual skill acquisition into context.
- Your didactic content can easily be added and will be available as online learning components.

 The educational teaching content is further enriched by references & links to AccessSurgery learning material.





HANDS-ON SIMULATION TRAINING

Perform hands-on skills and procedure training in a goal oriented training program. Comprehensive performance metrics are used to help provide instruction and performance feedback during training.

- Extensive simulator content is incorporated in the skills curricula providing breadth and variability of practice and training in increasing difficulty levels.
- Expert-derived performance goals established by scientific institutions and demonstrated as effective, are provided within ready-to-use curricula. You may optionally design curricula with your own training goals.

♦ The simulators are an outstanding example of thoughtful design and recognition that the virtual reality experience needs to be integrated with ease of use and automated recording of trainees' metrics which trainers can use to assess progress. ▶ ▶

Dr. Pasquale Berlingieri, Prof. Owen Epstein, Royal Free Medical Simulation Centre, UK





SIMULATION DEBRIEFING

Document participant progress, perform review and assessment and obtain useful information for curriculum improvement and research based on performance feedback following simulator training.

- Comprehensive objective metrics designed around acceptable tools such as OSATS.
- Performance reports with learning curve graphs, in the context of proficiency based curriculum, help learners understand their achieved skill level.
- Online access to reports make tracking student progress as easy as possible and enables learners to track their improvements.
- System usage reports allow educators to remotely follow and control the training process and learner attendance at all times.
- Export performance reports into files enables analyzing them in external statistical programs for research purposes.

