

**UNIVERSITY OF ABERDEEN
CLINICAL SKILLS CENTRE**

Profile

- Three colleges
- Over 135,000 students from 120 nations
- Over 850 research-active academic staff
- www.abdn.ac.uk

Key Training Priorities

- Provide users with transferable clinical skills
- Encourage independent learning
- Supply education for both novice and experienced physicians

Modules Used

- Endoscopy AccuTouch System
 - Lower GI Modules
 - Bronchoscopy Modules

Key Benefits of System

- Provides a safe environment and supports trainees in completing procedures faster and with fewer complications
- Familiarizes trainees with operation of real endoscopes and tools
- Supplies a cost-effective platform for learning several procedures
- Allows independent determination of skill level
- Helps enable physicians to address complications and serves as an effective tool for skills maintenance



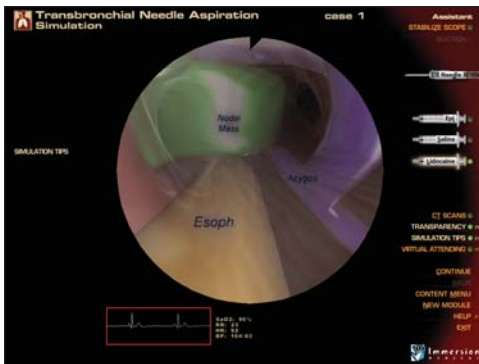
Immersion Medical's Endoscopy AccuTouch System provides training in bronchoscopy and upper and lower GI procedures.

Simulation Promotes Excellence in Training in University Setting

“The force feedback along with audio responses and the twists and turns of the anatomy through which they learn to navigate are all very helpful.”

—Mr. Jerry Morse, Manager, Clinical Skills Centre, Aberdeen University

Endoscopy AccuTouch® System **SUCCESS STORY**



BRONCHOSCOPY MODULES

Introduction to Bronchoscopy

This module includes videos covering the entire procedure, an interactive 3D model emulating the tracheobronchial tree and adjoining anatomic structures, and software that teaches the navigation of a bronchoscope in the simulated anatomy. The video includes an external view of the procedure, helping students understand the location of the scope.

Transbronchial Needle Aspiration (TBNA)

Users learn correct use of a cytology needle to biopsy a lymph node. Four cases present progressively difficult anatomies and pathologies, supplying broad experience to extend proficiency. The virtual attending feature advises the user on correct technique and warns of potential harm to the patient.

Pediatric Difficult Airways

The patients in this module range in age from neonates to school age children. The user places an endotracheal tube in either static anatomy for novice users, or dynamic anatomy, in which the patient breathes spontaneously.

Bronchoalveolar Lavage and Endobronchial Sampling

The sampling tools for this module, a needle, forceps, and brush, appear on the video screen after they have been inserted through the working channel of a realistic bronchoscope. Use of the tools will cause tissue deformation and realistic bleeding. The patient breathes, coughs, and exhibits changes in vital signs based on user actions.

Learning Independently with an Endoscopy Simulator

The University of Aberdeen, Scotland's third and the U.K.'s fifth oldest university, has been at the forefront of innovative training programs since its founding in 1495. It boasts of being the first school of medicine in the English-speaking world and was one of the first universities to open its doors to women. The University has invested heavily in medical research and education, opening its Clinical Skills Centre in 1997 and its Institute of Medical Science in 2002, both of which attract many leaders in the medical field as instructors and staff. In 2003, the University's Clinical Skills Centre purchased Immersion Medical's Endoscopy AccuTouch® System, becoming one of the first universities in the area to use simulators as a core component of its medical training program.

Technology for Advancing Medical Training

The University initially purchased the lower GI module of the Endoscopy AccuTouch System and has since added the bronchoscopy module. A single endoscopy simulator provides a cost-effective approach to training as it can be used for practicing upper and lower GI and bronchoscopy procedures. Pleased with the effectiveness of the system as a training tool, the Centre also purchased Immersion Medical's Cathsim®

AccuTouch System to provide intravenous insertion training for its nursing students.

Endoscopy training at the Centre begins with an orientation to and review of the steps involved in conducting a colonoscopy. Attending physicians, who are also responsible for attending to patients, have limited time to invest in hands-on training and, therefore, rely on the simulator to reinforce the clinical training that is initially provided to the trainees.

“With the advent of the endoscopy simulator, we can teach some basic fundamentals of colonoscopy. We can then let the house staff practice virtually; we can read their scores, and when the scores are good enough and we've watched them again, they can work on a patient,” explains Mr. Morse. This training regimen allows the house staff to increase their procedural skills and confidence within a safe environment prior to conducting the procedure on an actual patient, thereby minimizing unforeseen complications and challenges.

The feedback from both house staff and physicians on the use of the endoscopy simulator as part of the training process has been positive. Both groups have found that, when trained on the simulator, students are apt to complete the procedure faster and with fewer complications. The simulator thus assists the University staff to meet their primary objective of conducting safe and effective endoscopy procedures on patients.

Versatility and Amazing Realism

The AccuTouch Endoscopy system is also used to train house staff on gastroenterological anatomy. It enables physicians to identify and address common complications, become familiar with the devices used during the procedure, and independently determine their skill level using the automated performance metrics. With its patented force feedback technology, the simulator offers as close to a real feel for the procedure as possible. This realism helps to speed learning, explains Mr. Morse.

“I found that, compared to the work in the real operating theatres, the simulated procedure seemed quite real. It was amazing.”

—Mr. Morse

Endoscopy AccuTouch® System **SUCCESS STORY**

“The main thing is that it gives the house staff the feel of what’s happening,” he says. “The force feedback along with audio responses and the twists and turns of the anatomy through which they learn to navigate are all very helpful. Soon they realize that they are actually scoping.”

The simulator is also being used by physicians who have not performed an endoscopy procedure for a period of time and need to refresh their skills. The simulator’s diverse cases supply a broad range of anatomy and simulated complications so that doctors of nearly any skill level can improve their technique.

“I had not done a bronch in a very long time,” said Mr. Morse, “so I was using the simulator. I found that, compared to the work in the real operating theatres, the simulated procedure seemed quite real. It was amazing.”

Over the next few months, Mr. Morse and Centre staff intend to document and publish a study on the effectiveness of the simulator as a component of their overall medical training.



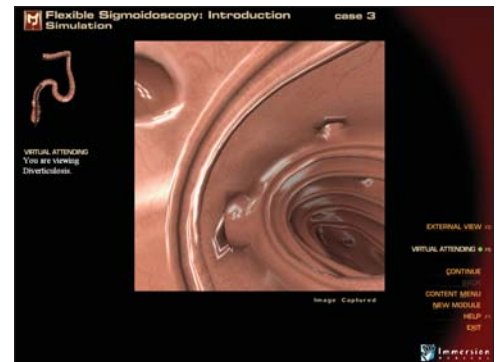
Endoscopy AccuTouch System

A realistic, computer-based system for teaching and assessing motor skills and cognitive knowledge of flexible bronchoscopy and upper and lower gastrointestinal flexible endoscopy. Real-time computer graphics include anatomic models developed from actual patient data. Force feedback is transmitted through the flexible scope to provide tactile sensations mimicking the actual feel of a procedure.

Endoscopy AccuTouch System Modules

Immersion Medical’s Endoscopy AccuTouch System’s diverse modules offer trainees a variety of opportunities for training. Current modules include:

- Bronchoscopy
 - Introduction to Bronchoscopy
 - Transbronchial Needle Aspiration (TBNA)
 - Bronchoalveolar Lavage and Endobronchial Sampling (BAL)
 - Endobronchial Sampling, and
 - Pediatric Difficult Airways
- Lower GI
 - Introduction to Sigmoidoscopy
 - Flexible Sigmoidoscopy: Supplemental Cases
 - Introduction to Colonoscopy
 - Colonoscopy: Biopsy
 - Colonoscopy: Basic Polypectomy
- Upper GI
 - Introduction to Esophagogastroduodenoscopy (EGD)
 - Introduction to Endoscopic Retrograde Cholangiopancreatography (ERCP)



LOWER GI MODULES

Introduction to Flexible Sigmoidoscopy Module

The real-time graphics show anatomy from actual patients and react like real tissue in real time. The colon expands with air insufflation and collapses with suction. The anatomy and procedure is explained through educational aids including 3D animations, video tutorials, a pathology atlas, and information on indications, contraindications, and complications of flexible sigmoidoscopy.

Introduction to Colonoscopy Module

As in all modules, users handle a colonoscope that looks, feels, and operates like a real scope. Realistic experiences include red-out when the scope tip presses against the mucosa, stool on the lens, and paradoxical motion when in a loop. Various patient cases and comprehensive didactic content is included.

Colonoscopy: Biopsy Module

Trainees use forceps in the working channel of the endoscope to interact with the mucosa and lesions. Interaction between the forceps and mucosa is very realistic, teaching the user the feel of tissue resistance when taking a sample and showing tissue deformation that accurately reflects the amount of pressure exerted by the tool. Intubation of the terminal ileum is also possible.

Colonoscopy: Basic Polypectomy Module

This lower GI module allows users to identify, capture, transect, and remove simulated polyps. Polypectomy equipment including snares, mini snares, hot forceps, electrocautery tips, and an electrosurgical unit are simulated. Complications include uncontrolled bleeding when the polyp head is guillotined, electrocautery-induced perforation, and vasovagal reactions.

About the University of Aberdeen

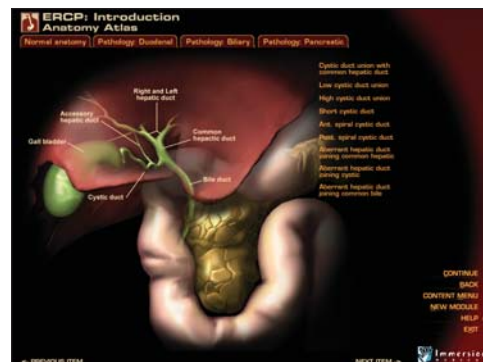
The University of Aberdeen is Scotland's third oldest and the fifth oldest in the UK. Aberdeen is an international university built on serving one of the most dynamic regions of Europe. With over 13,000 students, and over 3,000 staff, we are at the forefront of teaching and research in medicine, the humanities and sciences. The University has also invested heavily in medical research, where time and again University staff have demonstrated their skills as world leaders in their field. The Institute of Medical Sciences, completed in 2002, was designed to provide state-of-the-art facilities for medical researchers and their students.

About Immersion Medical, Inc.

Immersion Medical designs, manufactures, and markets computer-based medical training simulation systems worldwide. Immersion Medical integrates proprietary software, hardware, and patented tactile feedback technology to create highly realistic medical procedure simulations. These medical simulators allow healthcare providers to repetitively practice procedures in an environment that poses no risks to patients. The company has sold over 1,200 simulators worldwide across their five product lines including the Endovascular, CathSim IV, Endoscopy, Hysteroscopy and Laparoscopy AccuTouch Systems.

About Immersion Corporation

Founded in 1993, Immersion Corporation is a recognized leader in developing, licensing, and marketing digital touch technology and products. Bringing value to markets where man-machine interaction needs to be made more compelling, safer, or productive, Immersion helps its partners broaden market reach by making the use of touch feedback as critical a user experience as sight and sound. Immersion's technology is deployed across automotive, entertainment, medical training, personal computing, and three-dimensional simulation markets. Immersion and its wholly-owned subsidiaries hold more than 600 issued or pending patents worldwide.



UPPER GI MODULES

Introduction to Esophagogastroduodenoscopy (EGD)

The Introduction to EGD module provides instruction and practice in performing esophagogastroduodenoscopy. This procedure involves navigating the upper gastrointestinal tract, including the esophagus, stomach, and duodenum, examining the respective lining, and taking cytology samples of normal mucosa and suspicious lesions. The module allows users to track and manage some of the complications that might be encountered in a real procedure. Six progressively difficult cases expand learning by presenting variations in anatomy and pathology.

Introduction to Endoscopic Retrograde Cholangiopancreatography (ERCP)

The ERCP module accurately replicates the sight, sound, and feel of the endoscopic retrograde cholangiopancreatography (ERCP) procedure. Users view a realistic three-dimensional model that visibly responds to scope movement in real-time. The feel of performing the procedure is provided by Immersion's touch feedback (haptic) technology, which reproduces the tactile sensations of scope resistance, tissue stretching, and difficult cannulation. Six cases provide progressively difficult variations in anatomy and pathology.

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