

# RespiSim® System Overview



Medical Simulator  
INNOVACIÓN EN EDUCACIÓN



## It's All About the Lungs

To effectively teach mechanical ventilation, you need a simulated patient that the ventilator responds to like it would a real patient.

The RespiSim System for ventilator management training is built around the world's most realistic breathing simulator, the ASL 5000™. The ASL 5000 is so realistic that it used to develop and test ICU ventilators to the most rigorous standards.

RespiSim can breathe spontaneously and hold PEEP at any level, even >20 cmH<sub>2</sub>O. Airway resistance, lung compliance, and patient effort are minutely adjustable. This enables you to simulate almost any breath profile - including coughs or a patient whose condition changes over time.

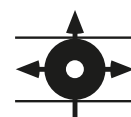
With the RespiSim System, you can conduct high-fidelity ventilation management training in anesthesia, critical care, emergency medicine, pulmonology, and respiratory care.

### Teach about topics such as:

- Weaning
- Lung protective ventilation
- Initiation of mechanical ventilation
- Patient-ventilator dyssynchrony
- Lung recruitment
- Recognizing over-distention
- Finding optimal PEEP
- ... and many more

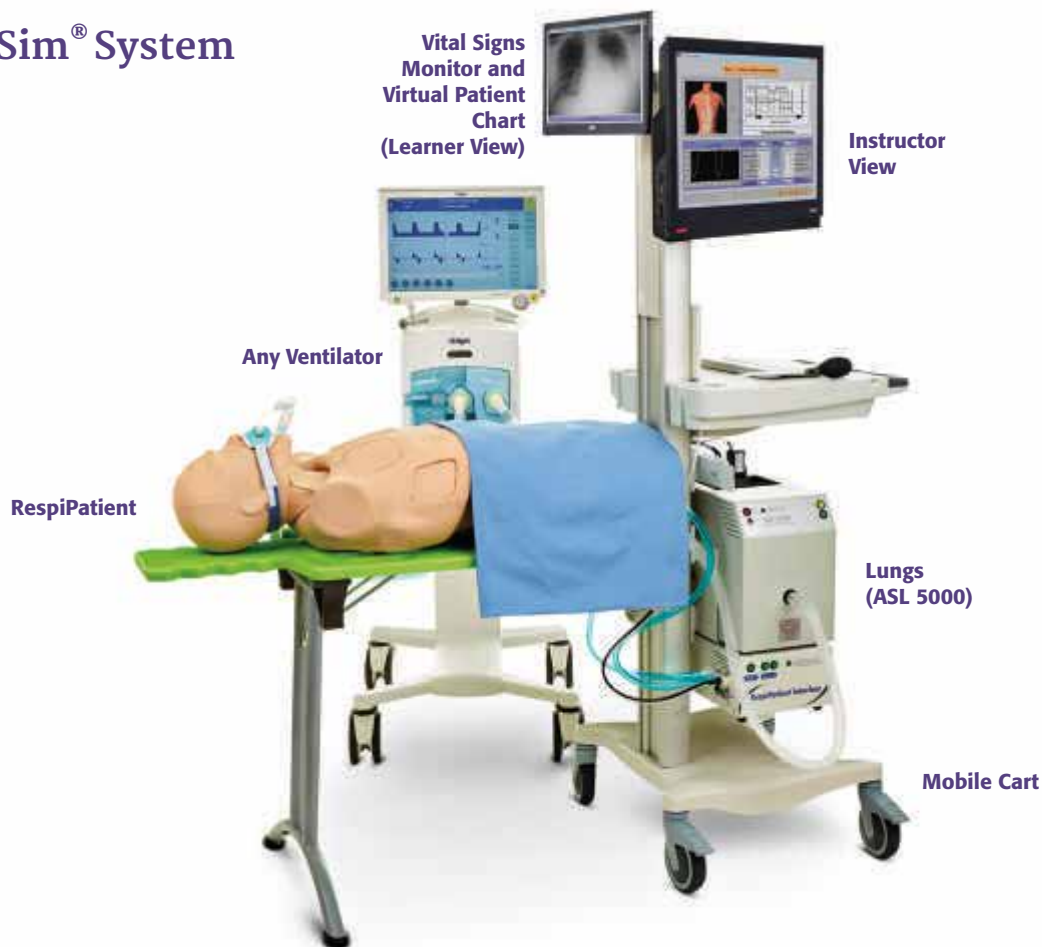


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INGMAR MEDICAL  
Respiratory Simulation Specialists

# RespiSim® System



## RespiSim® Software

The RespiSim software allows medical educators access to the realism and precision of the ASL 5000 with a user interface designed specifically for their needs.

The RespiSim software enables hands-on, immersive training through structured, multi-phase simulation scenarios that engage students in “clinical storytelling.” The instructor can amplify effects, challenge learners with unexpected events, or intervene to get the simulation back on track and ensure that learning goals are met.

**QuickChoice Menu** allows the instructor to set up a ventilator management scenario by simply selecting three parameters: patient type, diagnosis, and disease severity. You can keep it simple or customize further by adjusting resistance, compliance, rate, and spontaneous effort.

If you have a complex case to simulate, the full power and sophistication of the ASL 5000 Breathing Simulator is always available to you.



The new **QuickChoice Menu** makes it easy to get started.

**Vital Signs Monitor** gives learners the full view of patient status including x-rays, lab results, EKG rhythms, vital signs, ABGs, and end tidal CO<sub>2</sub>.

**Powerful debriefing** is facilitated with recordings of entire training sessions, including waveforms and ventilator data.



Advanced Auscultation Option uses a stethoscope with WiFi.

## RespiPatient<sup>®</sup>

With the ASL 5000 Breathing Simulator at its core, RespiPatient provides a comprehensive ventilator management training experience. You can move from initial CPR maneuvers to bag-valve-mask ventilation and intubation, all the way to complex ventilator management skills.

### Manikin features:

- Anatomically correct airway and chest structure, three-layered tissue, “real feel” skin
- Unilateral and bilateral chest rise
- Replaceable tissue sets
- Compact torso format is easy to store and transport

### Train the following skills:

- Airway management (orotracheal, nasotracheal, combitube, LMA placement, right main stem)
  - Full head tilt, chin lift, and jaw thrust
  - Inflatable tongue with real-life size and texture
  - “Breakout” teeth simulate the effects of bad practice in direct laryngoscopy
- Tension pneumothorax
  - Identification of tracheal deviation
  - Either right or left tension pneumothorax
  - Needle decompression maneuver with the familiar “hiss” of escaping air
- Chest tube insertion
- Tracheotomy
- Cricothyroidotomy
- Auscultation of lung and heart sounds



Train needle decompression skills with the characteristic “hiss” sound.

## RespiSim® Curriculum Modules

Developed in collaboration with leading educators, RespiSim Modules save precious instructor time by providing a comprehensive package of materials. Curriculum topics include:

**Bench Simulations** teach fundamental principles of mechanical ventilation

- Modes of Ventilation (*five modules*)
- Airway Resistance and Static Compliance in CMV (*four modules*)
- Understanding Modes of Mechanical Ventilation: A New Taxonomy (*10 modules*)

**Clinical Simulations** train assessment and diagnostic skills using multi-stage patient scenarios and incorporate elements such as chest x-rays, blood gases, etc.

- Clinical Simulation Exam Prep (*three modules*)
- Patient-Ventilator Synchrony in the Pressure Assist-Control Mode (*four modules*)
- Patient-Ventilator Synchrony in the Volume Assist-Control Mode (*four modules*)
- Non-Invasive Positive Pressure Ventilation
- Lung Protective Ventilation: Low Tidal Volume
- Initiation of Mechanical Ventilation (*10 modules*)

## Options

**RespiScope™ Advanced Auscultation Option** provides lung, heart, and bowel sounds by lobe and heart chamber. It uses Cardionics’ SimScope™ WiFi for exceptional sound quality

**Ventilator Interface Kit (VIK)** enables you to include ventilator parameters (modes, alarm limits, alarms) in your simulation that otherwise would not be available for debriefing. The VIK is also a great tool to teach proper patient charting and works with all leading ICU ventilators.

**CO<sub>2</sub> Kit** enables RespiPatient to exhale real CO<sub>2</sub> for use with the capnography option on your ventilator. RespiPatient is able to generate true-to-life waveforms for analysis.

**OxSim® for Pulse Oximetry** provides oxygen saturation (SpO<sub>2</sub>) signals for use with any pulse oximeter connected to a ventilator or patient monitor.

OxSim® is a registered trademark of Pronk Technologies.  
SimScope™ is a registered trademark of Excellus Technologies.



## ASL 5000™ Breathing Simulator

A major shortcoming of most manikin simulators is that their respiratory functions are fairly simple. They offer a limited number of settings and their spontaneous breathing capabilities are inadequate. The RespiSim System is different because its core is the high-fidelity ASL 5000 Breathing Simulator. The ASL 5000's unique design makes it possible to precisely craft very realistic breath profiles.

The ASL 5000's breath patterns are created by the movement of a piston in a cylinder. This movement can be so precisely controlled that the ASL 5000 is used to develop and test neonatal ventilators. In fact, many of the ventilators in hospitals today have been developed using the ASL 5000.

### Features

- Spontaneous breathing
- Holds PEEP at any level, even  $> 20$  cmH<sub>2</sub>O
- Lung compliance from 0.5 mL/cmH<sub>2</sub>O to 250 mL/cmH<sub>2</sub>O
- Able to create nonlinear compliance with upper and lower inflection points
- Airway resistance from 3 to 500 cmH<sub>2</sub>O/L/s
- Inspiratory and expiratory resistance values can be set separately
- 1 or 2 lung compartment modeling
- Tidal volume 2 mL to 2.5 L
- Neonatal to adult patients
- Use with any ventilator, BiPAP, or CPAP device

**Simulate complex disease states** such as ARDS, COPD, apnea, emphysema, pneumothorax, bronchospasm, pneumonia, cystic fibrosis, chronic bronchitis, paralytics wearing off, waking from anesthesia, breath patterns such as Kussmauls, and many more.

## Package Components

	Essential	Plus	Pro
ASL 5000 Breathing Simulator	•	•	•
RespiSim Software	•	•	•
Curriculum Modules	•	•	•
6 Hours Live Distance Training	•	•	
2-Day Customer-Site Training			•
16" USB Monitor		•	•
Touch Screen Computer		•	•
Mobile Cart		•	•
RespiPatient Manikin			•
RespiScope™			•
CO2 Kit			•



## RespiSim Packages

The RespiSim System is modular, making it easy to upgrade with additional components as needs and resources expand.

### Training

To help you quickly master the power of these tools, all packages include setup support and in-depth training. Ask about earning CRCE credits from the American Association for Respiratory Care.

### Customer-Site

Full-day sessions at your facility (continental USA)

### Live Distance Training

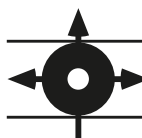
Two-Hour Interactive Sessions via web conferencing

### Modules included in packages:

**Essential:** Non-Invasive Ventilation

**Plus:** Modes of Ventilation (set of 5)

**Pro:** Modes of Ventilation (set of 5) and the Patient-Ventilator Synchrony in the Volume Assist-Control Mode (set of 4)



# INGMAR MEDICAL

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IngMar Medical, Ltd. is ISO 9001:2008 certified.



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INNOVACIÓN EN EDUCACIÓN

Medical Simulator Spain  
Ctra de Pozuelo a Majadahonda Km. 1.800  
28223 Pozuelo de Alarcón | Madrid | Spain  
T 902 196 788  
T (+34) 91 382 08 88  
F (+34) 91 381 98 80

www.medical-simulator.com  
info@medical-simulator.com  
@Simulacion\_Medi  
medical-simulator  
medicsimulator  
@medical\_simulator