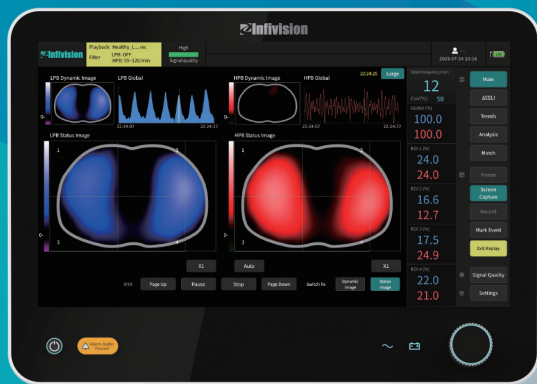




Infivision ET1600

Real-time Imaging of Pulmonary Ventilation and Perfusion

- Dynamic bedside display of regional lung assessment of ventilation and pulmonary perfusion
- Continuous real-time evaluation of diagnostic and therapeutic effectiveness
- Guidance for optimizing mechanical ventilation settings

The Future of Lung Monitoring, Now.

WE ARE EIT

Redefining Pulmonary Imaging

Electrical Impedance Tomography (EIT) is a non-invasive imaging technology that detects impedance changes by applying low-intensity current and measuring surface voltages via electrodes placed around the chest. Advanced imaging algorithms convert these signals into real-time functional images of lung ventilation and perfusion.

■ Comparison of several medical imaging techniques

“EIT stand out as the only Non-invasive, Real-time, Bedside imaging tool offering continuous functional monitoring without radiation exposure.”

	Imaging classification	Bedside	Real-time	Continuous monitoring	Radiation Free	Operator-Independent
Electrical Impedance Tomography(EIT)	Functional	✓	✓	✓	✓	✓
X-Ray	Structural	✓	✗	✗	✗	✓
CT	Structural	✗	✗	✗	✗	✓
MRI	Structural	✗	✗	✗	✓	✓
Ultrasound	Functional&Structural	✓	✓	✗	✓	✗



Real-time
Functional Imaging
Bedside Use
Radiation-Free

The Future of Lung Monitoring, Now.

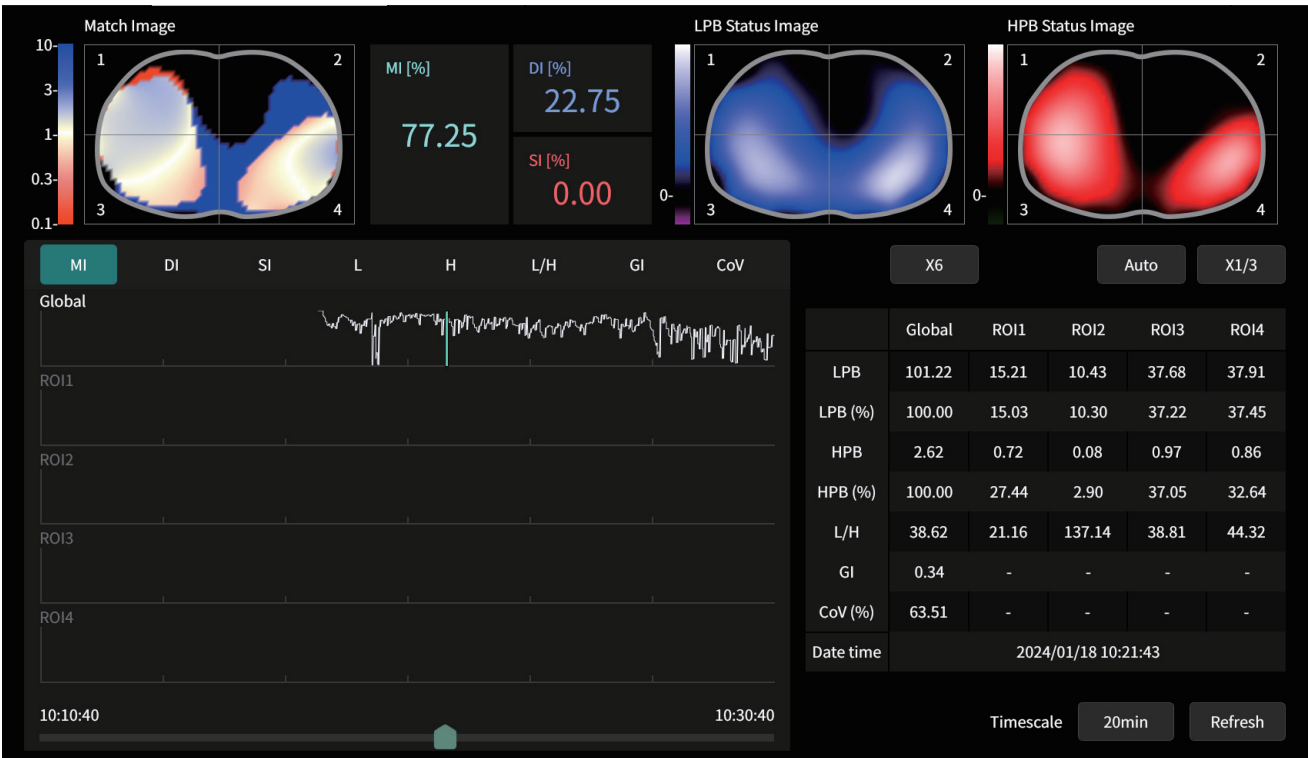


Product Strengths & Medical Applications

- Driven by patented innovations in EIT core technology
- Unique signal separation technology provides real-time simultaneous imaging of lung ventilation and perfusion
- Multi-view imaging modes support functional assessment, trending, and personalized pulmonary care
- PEEP titration tools support personalized lung-protective ventilation strategies
- Data software enables offline analysis and supports research innovation
- Modular design supports bedside mobility and seamless patient transfer
- Built-in lithium battery provides 6 hours of cordless operation

Advanced Lung Monitoring with a Focus on Ventilation–Perfusion mapping

A unique matching view to support clinical assessment:



Match view

■ Ventilation–Perfusion mapping and mismatch detection

MI

Matching Index. Ventilation and perfusion matching index (0–100%). Higher values indicate better alignment in both area and intensity between the ventilation and perfusion images.

DI

Dead Space Index. Dead Space Index (0–100%). Higher values indicate areas where ventilation is present but perfusion is missing — a typical pattern in dead space regions.

SI

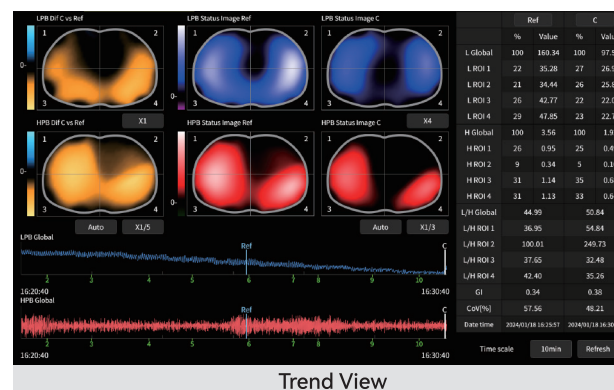
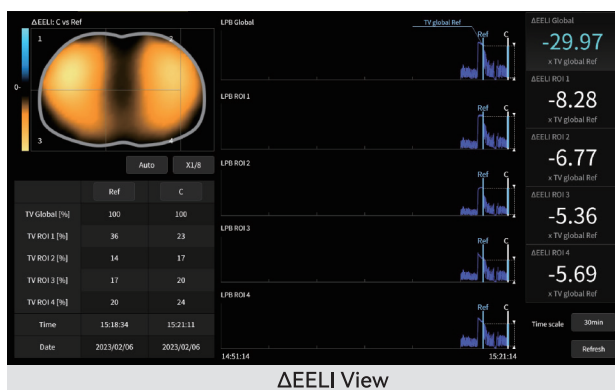
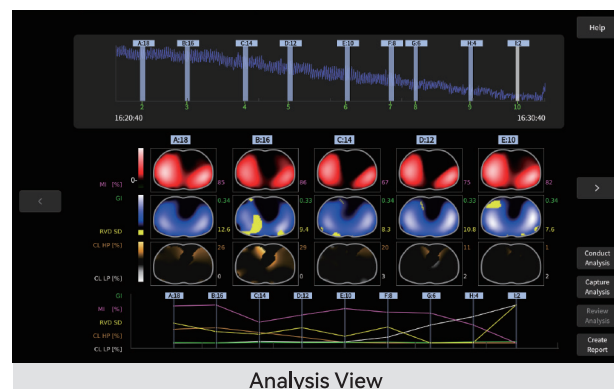
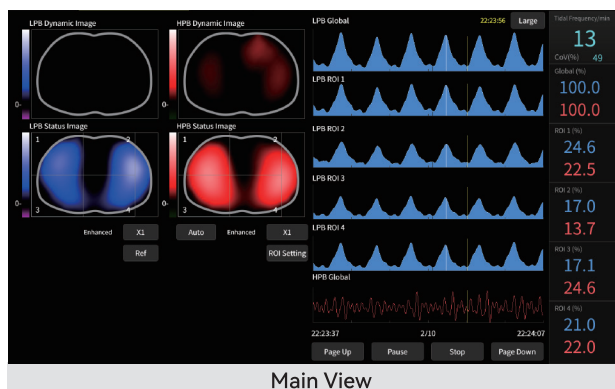
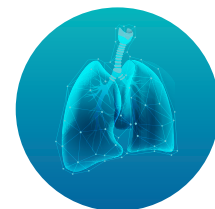
Shunt Index. Shunt Index (0–100%). Higher values reflect areas that are perfused but lack ventilation, consistent with intrapulmonary shunt patterns.

■ Homogeneity of Lung ventilation, one-click measurement

GI

Global Inhomogeneity Index. The GI reflects the heterogeneity of tidal volume distribution in the lungs. Lower values correspond to more homogeneous ventilation and better lung compliance while higher values suggest greater inhomogeneity, common in ARDS or COPD.

Multiple visualization modes for comprehensive lung assessment



CoV	Center of Ventilation. Represents where ventilation is centered along the ventral–dorsal axis (0% = front, 100% = back). Higher values indicate a shift of ventilation toward the dorsal (dependent) lung regions — typically favorable in supine patients.
RVD	Regional Ventilation Delay. Measures delay in regional inspiration relative to global inspiration. Higher values reflect areas with delayed lung activation.
Overdistension/ Collapse	Assesses regional lung compliance across multiple PEEP levels to identify optimal settings. - CL HP indicates compliance loss at high PEEP (overdistension) - CL LP indicates compliance loss at low PEEP (collapse) Each region's compliance is compared across steps to highlight the most lung-protective range.
ΔEELI	Change in End-Expiratory Lung Impedance Tracks changes in lung volume over time by comparing end-expiratory impedance. Useful after PEEP changes, recruitment, or body position shifts, to detect recruitment or de-recruitment.
Trend View	Displays time-based changes in ventilation and perfusion side by side. Supports tracking of regional recruitment, de-recruitment, and response to therapy over time.



Pulsatile Hypertonic Saline Method for Perfusion Imaging

A comparison of two EIT-based techniques for assessing lung perfusion in critically ill patients

■ Pulsatile method:

The pulsatile method estimates Pulmonary Perfusion by measuring cyclic changes in thoracic electrical impedance caused by the natural pulsation of pulmonary blood vessels during the cardiac cycle. These subtle changes are extracted using advanced signal processing algorithms, without the need for external contrast agents or interruption of spontaneous breathing. This allows for continuous, real-time perfusion monitoring, in parallel with ventilation, under both invasive and non-invasive ventilation conditions. The method is completely non-invasive, trauma-free, and does not interfere with the physiological status of pulmonary circulation.

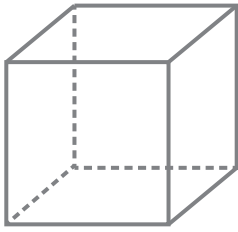
■ Hypertonic saline method:

The hypertonic saline method is based on contrast-enhanced impedance imaging. A high-conductivity bolus (typically 10 ml of 5–10% NaCl) is rapidly injected into the venous system. As the saline passes through the pulmonary vasculature, it temporarily reduces thoracic electrical resistance in the regions it perfuses. This drop in impedance is used to infer regional blood flow. However, the method requires the patient to hold their breath, and the measurement is transient (4–8 seconds).

—— Excerpted from the Chinese Expert Consensus on the Clinical Application of Pulmonary Electrical Impedance Imaging Technology in Critical Respiratory Management, Chinese Medical Journal

“Real-time dual-function monitoring without interruption — only with the Pulsatile method.”

Distinguishing points	Hypertonic saline method	Pulsatile method
Implementation conditions	Injection of 10 ml of 5–10% Normal Saline as a high-conductivity agent	No contrast needed; no disruption to breathing
Imaging situation	Shows only Pulmonary perfusion	Shows ventilation and perfusion simultaneously
Operational requirements	Requires patient to hold breath (~8s)	No special patient action required
Real-time Imaging Bedside	No (Requires Post-processing)	Yes (Displays in Real-time)
Duration	Transient monitoring (~4–8 s)	Continuous monitoring
Trauma risk	Yes	No
Interference with blood flow status	Yes	No



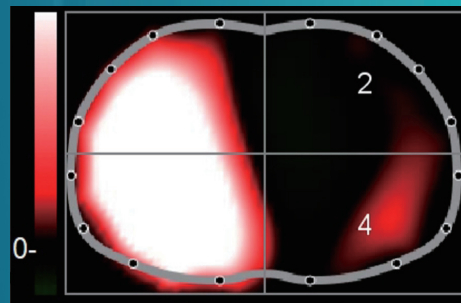
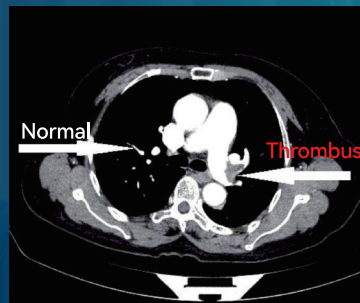
Clinical Application Example

Infivision ET1600

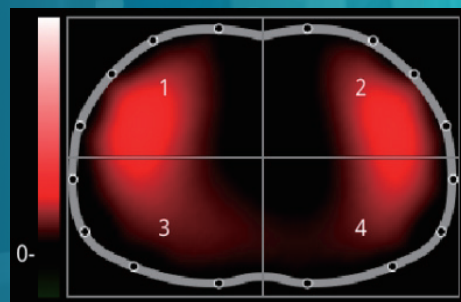
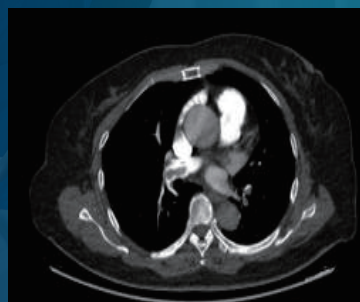
Real-time Pulmonary Perfusion Imaging

- “EIT-based perfusion imaging provides real-time, bedside visualization of regional pulmonary blood flow.”
- Its results correlate well with CT pulmonary angiography (CTPA), the gold standard for Pulmonary Embolism (PE) diagnosis.
- Unlike CT, EIT is non-invasive, radiation-free, and allows continuous monitoring without patient transport.
- In this case, EIT detected a perfusion defect prior to thrombolysis and showed restored perfusion post-treatment.

**Before
thrombolysis**

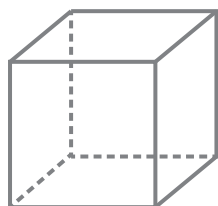


**After
thrombolysis**



Comparison of Pulmonary perfusion imaging before and after thrombolytic therapy in a Pulmonary Embolism (PE) patient. CTPA confirms a perfusion defect, while EIT demonstrates regional perfusion recovery post-treatment real-time bedside.

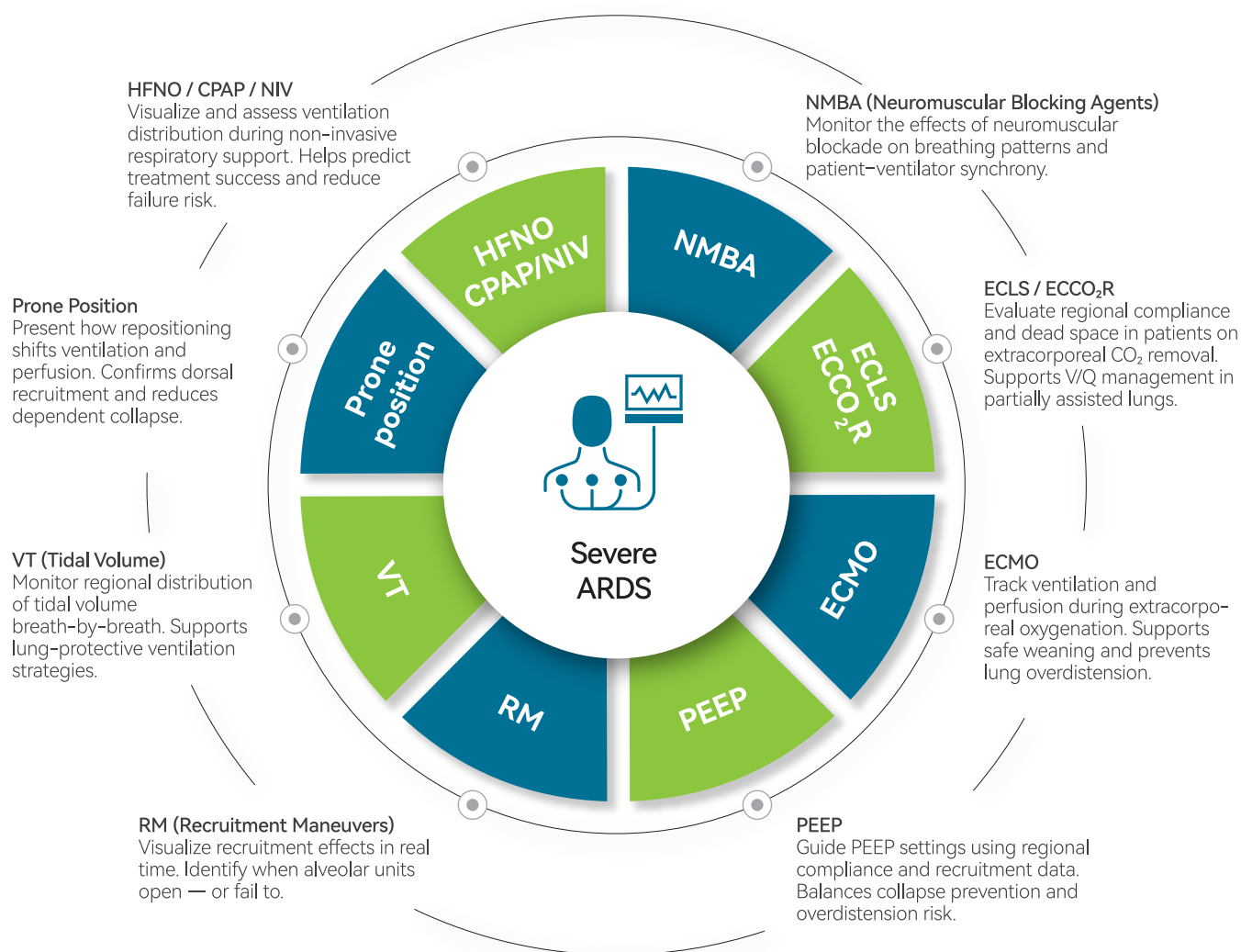
Application of Pulmonary EIT in Critical ARDS Management



ARDS remains a major cause of mortality and prolonged ICU stays worldwide.

In June 2023, the European Society of Intensive Care Medicine (ESICM) released updated guidelines for the definition, diagnosis, and management of ARDS, building upon the 2017 ATS/ESICM consensus. These guidelines identified seven key respiratory support strategies for managing ARDS: HFNO, NIV, NMBA, ECCO₂R/ECLS, ECMO, PEEP, and prone positioning. Each of these strategies targets a specific aspect of lung protection or gas exchange optimization.

As evidenced in the previous literature, EIT demonstrates significant clinical value across seven key application areas.



ESICM: European Society of Intensive Care Medicine
HFNO: high-flow nasal cannula oxygen therapy
CPAP: continuous positive airway pressure

NIV: Non-invasive ventilation
NMBA: Neuromuscular blocking agent
ECLS: Extracorporeal Life Support
ECCO₂R: Extracorporeal carbon dioxide removal

ECMO: extracorporeal membrane oxygenation
PEEP: Positive end-expiratory pressure
RM: Recruitment maneuver
VT: Tidal Volume

100%
COMPLETE

The table below presents key clinical applications of Pulmonary Electrical Impedance Tomography (EIT), as identified by a panel of experts in the 2023 Chinese Expert Consensus.

Each application is accompanied by a Recommendation Strength Score (mean $\pm$ SD, scale 1–9), which reflects the level of expert agreement regarding its clinical relevance, practical feasibility, and potential impact.

Ventilation Monitoring

- Monitor pendelluft (autotrigger injury) , Recommendation Strength 7.13 ± 1.37
- Perioperative respiratory management , Recommendation Strength 6.95 ± 1.62
- HFNC efficacy evaluation , Recommendation Strength 7.09 ± 1.81
- Assess ventilation in severe patients , Recommendation Strength 7.01 ± 1.66
- Detect ventilation defects at bedside , Recommendation Strength 7.22 ± 1.29
- Monitor pneumothorax and post-intervention changes , Recommendation Strength 6.88 ± 1.31

Mechanical Ventilator Management

- Support offline prediction models , Recommendation Strength 6.97 ± 1.48
- Individualized PEEP titration in ARDS , Recommendation Strength 7.43 ± 1.43
- Balance recruitment vs. overdistension in PEEP setting , Recommendation Strength 7.20 ± 1.22
- Adjust PEEP in obstructive lung disease , Recommendation Strength 6.81 ± 1.24
- Manage ventilation in prone position , Recommendation Strength 7.40 ± 1.22
- Bedside V/Q assessment in COVID-19 patients , Recommendation Strength 7.46 ± 1.29

Perfusion Monitoring

- Assess Regional V/Q matching in Respiratory failure , Recommendation Strength 6.71 ± 1.54
- Bedside guide diagnosis of Pulmonary Embolism (PE), Recommendation Strength 7.05 ± 1.49
- Monitor real-time perfusion changes to evaluate blood flow distribution , Recommendation Strength 7.48 ± 1.40

——— Excerpt from Chinese Expert Consensus on the Clinical Application of Lung Resonance Imaging Technology in Critical Respiratory Management. Chinese Medical Journal

1. Grasselli, Giacomo et al. "ESICM guidelines on acute respiratory distress syndrome: definition, phenotyping and respiratory support strategies." *Intensive care medicine* vol. 49.7 (2023): 727–759. doi:10.1007/s00134-023-07050-7
2. Fulton, Rachel et al. "Prophylactic Postoperative High Flow Nasal Oxygen Versus Conventional Oxygen Therapy in Obese Patients Undergoing Bariatric Surgery (OXYBAR Study): a Pilot Randomised Controlled Trial." *Obesity surgery* vol. 31.11 (2021): 4799–4807. doi:10.1007/s11695-021-05644-y
3. Raueo, Michela et al. "A Pilot Study on Electrical Impedance Tomography During CPAP Trial in Patients With Severe Acute Respiratory Syndrome Coronavirus 2 Pneumonia: The Bright Side of Non-invasive Ventilation." *Frontiers in physiology* vol. 12 728243. 9 Sep. 2021, doi:10.3389/fphys.2021.728243
4. Slobod, Douglas et al. "Pathophysiology and Clinical Meaning of Ventilation–Perfusion Mismatch in the Acute Respiratory Distress Syndrome." *Biology* vol. 12.1. 67. 30 Dec. 2022, doi:10.3390/biology12010067

5. 崔巍, 姜辉, 郑颖. 电阻断层扫描对危重患者肺灌注评价的临床应用进展. *中华核医学与呼吸杂志*, 2023, 46 (06):610–613. doi:10.3760/cmaj.cn12147-20221002-00799
6. Francheau, Guillaume et al. "Prone positioning monitored by electrical impedance tomography in patients with severe acute respiratory distress syndrome on veno-venous ECMO." *Annals of intensive care* vol. 10.1, 12. 3 Feb. 2020. doi:10.1186/s13613-020-0633-5
7. Jimenez, Jose Victor et al. "Electric impedance tomography-guided PEEP titration reduces mechanical power in ARDS: a randomized crossover pilot trial." *Critical care (London, England)* vol. 27.1, 21. 17 Jan. 2023. doi:10.1186/s13054-023-04315-x
8. Zhao, Zhanqi et al. "Identification of lung overdistension caused by tidal volume and positive end-expiratory pressure increases based on electrical impedance tomography." *British journal of anaesthesia* vol. 126.5 (2021): e167–e170. doi:10.1016/j.bja.2021.01.026

Versatile Use

Across Patients, Diseases, and Departments



Multiple Department

- ICU / Operating Room / Emergency Room
- Respiratory and Pulmonary Departments
- Sub-intensive and Rehabilitation Units
- Cardiothoracic Surgery and Post-op Recovery



Multiple Disease

- Acute lung injury (ARDS, COVID-19, pneumonia)
- Chronic respiratory disease (COPD, pulmonary hypertension)
- Postoperative monitoring (lung transplant, thoracic surgery)
- Ventilation mismatch (atelectasis, perfusion defects)

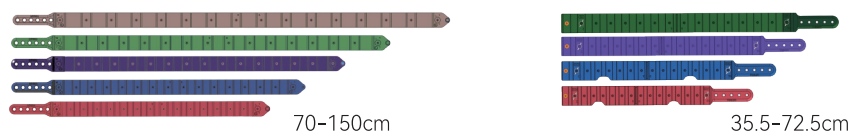


Multiple Patients



Patient Cable

Equipment Cable



Electrode Belts



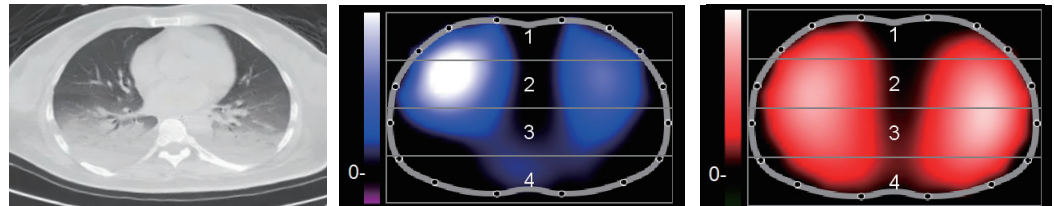
Infvision ET 1600
See More. Intervene Smarter. Breathe Better.

Case Studies

Real-Time EIT Imaging in Various Conditions

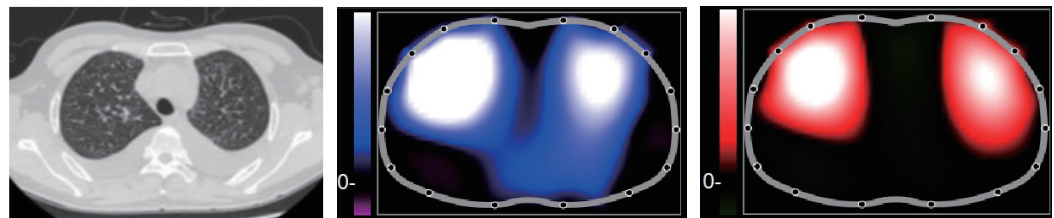
ARDS

CT imaging demonstrates diffuse alveolar involvement predominantly in gravity-dependent lung regions. EIT ventilation mapping reveals absent regional signals in these dependent zones, suggesting alveolar collapse, while non-dependent regions exhibit signs of overdistension. – “EIT perfusion imaging shows relatively homogeneous pulmonary blood flow across both lungs.”



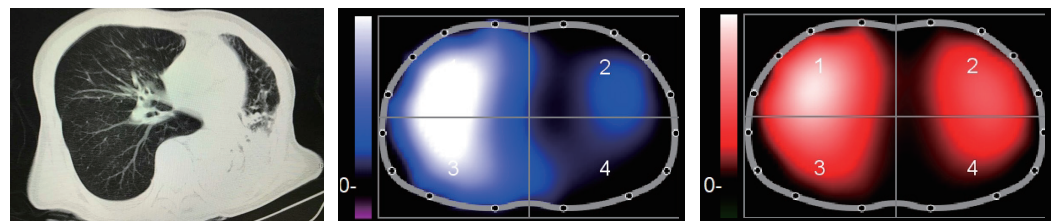
Pleural Effusion

CT imaging reveals a crescent-shaped low-density collection compressing the dorsal lung. EIT ventilation imaging demonstrates globally reduced ventilation activity, with a concentration of signal near the mediastinum and anterior chest wall. – “EIT perfusion imaging indicates mediastinal shifting of perfusion distribution due to mechanical compression.”



Lung Atelectasis

CT imaging demonstrates complete left lung collapse secondary to mucus plugging. EIT ventilation imaging confirms markedly impaired ventilation in the left lung. – “EIT perfusion imaging reveals symmetrical pulmonary perfusion, indicating a ventilation-perfusion mismatch.”



Life is visible through technology

Infivision

We invite you to explore the power of EIT together, let's shape the future of non-invasive, real-time lung imaging.



homepage



& LinkedIn



& Facebook

Infivision Medical Imaging Technology Co., Ltd.

www.infivision.com

