



- LCI to detect early peripheral airway damage in CF patients
- Greater sensitivity than spirometry
- SF<sub>6</sub> true insoluble gas resolves typical LCI pitfalls
- Outstanding gas analyser sensitivity, accuracy and stability
- Quick and child-friendly measurement at normal breathing
- The SF<sub>6</sub> gas mixture and low resistance design make the test extremely comfortable

## Lung Clearance Index Measurements from Preschool Children to Adults

LCI is a marker of overall lung ventilation inhomogeneity; as pulmonary ventilation worsens, the number of tidal breaths and the expiratory volumes required to clear the lungs are increased, as documented by a greater value. The measurement involves a tracer gas which is recorded during a multiple breath washout (MBW) test.

LCI is a more sensitive marker of abnormalities than FEV<sub>1</sub>, allowing early detection of disease in the smaller airways, down to small children and infants. LCI diagnostic tests are particularly important in the field of cystic fibrosis (CF).

Innocor® LCI stands out from traditional methods by using minimal amounts (0.2%) of SF<sub>6</sub> tracer gas. This patented technology represents an innovative solution to typical pitfalls: no influence of N<sub>2</sub> back-diffusion into the lungs from blood and tissues, no impact of

pure O<sub>2</sub> on breathing pattern or gas exchange, considerably shorter testing time and no sensitivity to inspiratory leaks.

Innocor® LCI uses a fast-responding photoacoustic infrared gas analyser with outstanding sensitivity, accuracy and stability.

The advanced wash-in wash-out technique makes test significantly shorter and eliminates the need for waiting time between manoeuvre or in case of manoeuvre failure (e.g. coughing or leaks).

The extremely low resistance of the specifically designed breathing circuit and avoiding the use of irritating O<sub>2</sub> concentrations guarantee the perfect patient experience for both adults and children.



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The Metabolic Company

## Bibliography

- Horsley. Lung clearance index in the assessment of airways disease. *Respir Med.* 2009 Jun;103(6):793-9.
- Horsley et al. Closed circuit rebreathing to achieve inert gas wash-in for multiple breath wash-out. *ERJ Open Res.* 2016 Jan 22;2(1).
- Trinkmann et al. Multiple breath washout testing in adults with pulmonary disease and healthy controls - can fewer measurements eventually be more? *BMC Pulm Med.* 2017 Dec 11;17(1):185.
- ERS/ATS Consensus statement, Robinson et al. Consensus statement for inert gas washout measurement using multiple- and single-breath tests. *Eur Respir J.* 41; 507-522, 2013.
- More scientific studies on [www.cosmed.com/bibliography](http://www.cosmed.com/bibliography)



Patient interface for children and adults



Compact and portable



Several tests in miniature gas cylinder using dilution with air

Innocor LCI is manufactured by COSMED Nordic ApS



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## Technical Specifications

| Product   | Description   | REF         |
|---|---|-------------|
| Innocor LCI   | Lung Clearance Index  | INN00400-1b |
| Standard packaging  | Innocor unit, compact respiratory valve w/ flowmeter and sampling line, 2L and 3L rebreathing bags, pulse oximeter, gas cylinder, mouthpieces (4 pcs), antibacterial filters (5 pcs adult & 5 pcs pediatric), nose clips (5 pcs), software, power cord and user manual. |             |
| <b>Standard tests</b>   |   |             |
| Lung Clearance Index  | LCI, FRC  |             |
| <b>Optional tests</b>   |   |             |
| Cardiac Output  | CO, Pulmonary Blood Flow, Lung Volume   |             |
| CPET - Breath by Breath   | Gas Exchange (VO <sub>2</sub> , VCO <sub>2</sub> , RER), Ventilatory (VE, VT, RR), Heart Rate, Spirometry (FVC, FEV <sub>1</sub> )  |             |
| <b>Flowmeter</b>  |   |             |
| Type  | Differential pressure pneumotachometer  |             |
| Range (Standard size)   | ±100 L/min  |             |
| Sampling frequency  | 100 Hz  |             |
| Dead space  | 12 mL   |             |
| <b>Rebreathing valve</b>  |   |             |
| Type  | Pneumatic, with silicone valve insert   |             |
| Dead space, Compact (non-rebreathing)                                 | 5 mL  |             |
| <b>Multi-Gas analyzer</b>   |   |             |
| Type  | Photoacoustic spectroscopy  |             |
| Components and ranges   | N <sub>2</sub> O 0-2.5%, SF <sub>6</sub> 0-0.5%, CO <sub>2</sub> 0-10%  |             |
| Accuracy after calibration  | ± 1.5% rel.   |             |
| Signal-to-noise ratio   | > 1000 @ half-scale (N <sub>2</sub> O and SF <sub>6</sub> ); > 400 @ half-scale (CO <sub>2</sub> )  |             |
| Sampling frequency  | 100 Hz  |             |
| Sample flow rate  | 120 mL/min  |             |
| <b>Oxygen sensor</b>  |   |             |
| Type  | Laser diode absorption spectroscopy   |             |
| Range   | 5-100%  |             |
| Accuracy after calibration  | ± 1.5% rel.   |             |
| Signal-to-noise ratio   | > 500 @ 21% O <sub>2</sub>  |             |
| Sampling frequency  | 100 Hz  |             |
| Sample flow rate (same flow as above)                                 | 120 mL/min  |             |
| <b>Gas supply</b>   |   |             |
| Gas composition   | 5% N <sub>2</sub> O, 1% SF <sub>6</sub> , 94% O <sub>2</sub>  |             |
| Cylinder capacity   | 18 L (0.15 L @ 124 bar & 21 °C)   |             |
| Approx. number of test manoeuvres                                     | ~ 75  |             |
| <b>Hardware</b>   |   |             |
| Dimension & Weight  | 35 x 29 x 26 cm / 8 kg  |             |
| Power supply  | 100-120 V / 200-240 V, 50/60 Hz   |             |
| Power consumption   | 30 W nom., 50 W max.  |             |
| <b>Environmental</b>  |   |             |
| Operating temperature   | 10 - 40 °C  |             |
| Operating pressure  | 525 - 800 mmHg  |             |
| <b>Software</b>   |   |             |
| Available languages   | English (US/GB/IE), Danish, German, Italian, Spanish, Dutch, Portuguese, Swedish, French  |             |
| PC Configuration  | Windows 10, RAM >1 GB, Hard Disk >16 GB, 1 USB port   |             |
| <b>Safety &amp; Quality Standards</b>                                 |   |             |
| MDD (93/42 EEC), FDA 510(k), EN 60601-1 (safety) / EN 60601-1-2 (EMC) |   |             |

CE 0543

To know more:

