

Stage021



Revolutionary Technology, Simplified Healthcare



MediPines AGM100

FDA Approved | CDSCO Approved | WHO Recognized



- Invented by: **Dr. John B. West, MD, PhD**
- Non-Invasive **Gas Exchange Monitor**
- Cardiopulmonary **Diagnostic Support**

Advancing Respiratory Medicine



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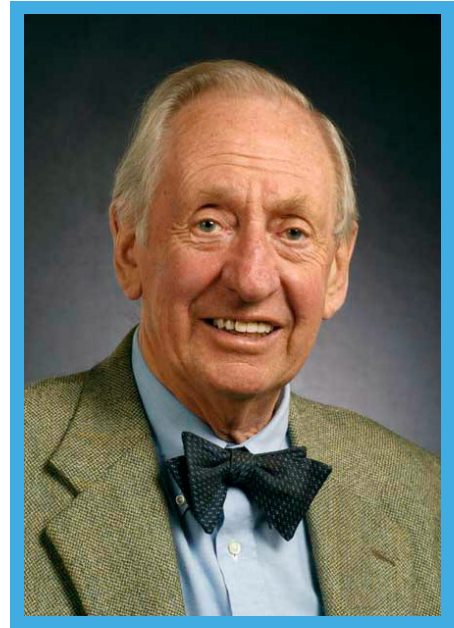
AGM100® is built on patented technologies and manufactured in the USA, in MediPines' FDA registered, MDSAP:ISO13485-certified facility in California © 2021 MediPines Corporation. All rights reserved. MediPines logo and AGM100 are trademarks of MediPines Corporation. MPAUG2021

MediPines AGM100® is FDA 510(k) Cleared and Health Canada COVID-19 Emergency Authorized

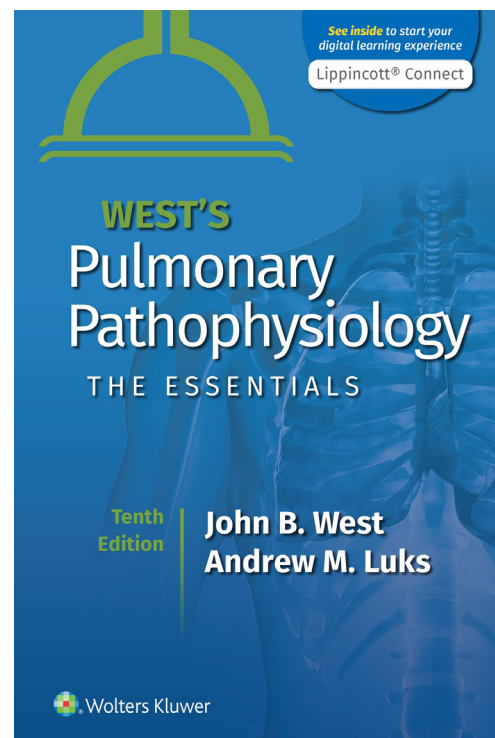
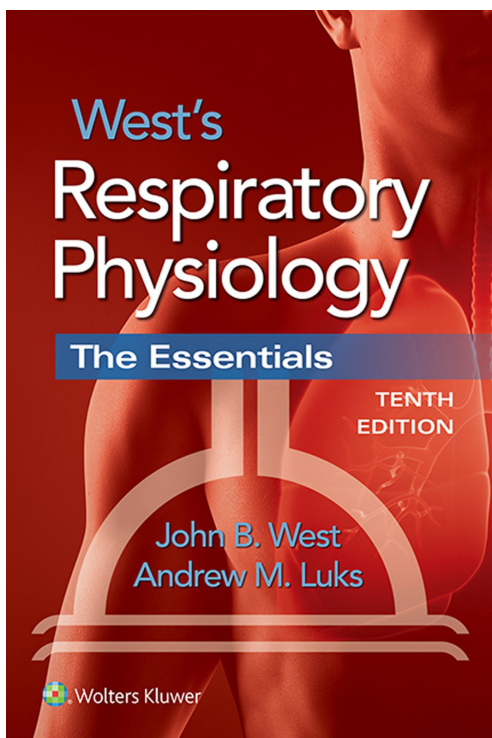
Dr. John B. West

The Physiology That Shaped Modern Pulmonology

A world-renowned respiratory physiologist and Fellow of the National Academy of Medicine, Dr. West has authored 500+ scientific papers and over twenty medical books. An emeritus professor at UC San Diego, he remains actively engaged in advancing respiratory physiology through ongoing research and publication. Dr West is one of the most widely cited and celebrated doctors in the history of pulmonary physiology.



Foundational Texts That Educated Generations



While Dr West has authored several books, West's Respiratory Physiology and West's Pulmonary Pathophysiology, have prominently shaped how pulmonologists worldwide understand lung function and disease. These texts remain the definitive references in respiratory medicine, underscoring the depth and authority behind the physiological principles that guide AGM100.

The AGM100

The MediPines AGM100 is the first of its kind, FDA-cleared, and CDSCO-approved non-invasive pulmonary gas exchange analyzer. By providing instantaneous gas exchange measurements, physicians can assess and manage cardiorespiratory function of their patients much more accurately. The AGM100 measures critical parameters, such as blood and alveolar oxygen levels, with accuracy comparable to arterial blood gas (ABG) measurements; enabling faster intervention through early detection of respiratory decline to improve patient outcomes.



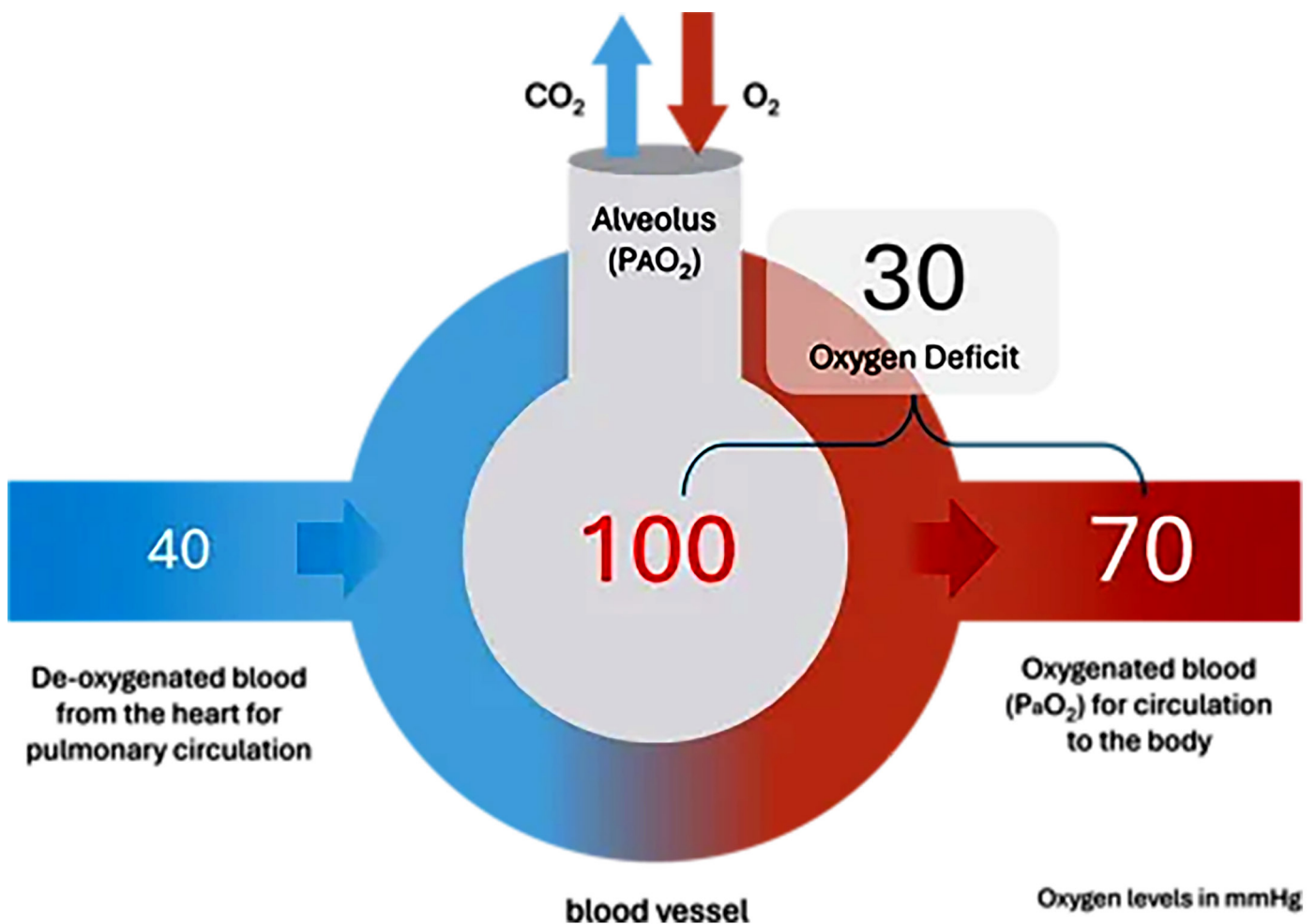
12 Respiratory Measurements

Detect Degree of Pulmonary Gas Exchange Impairment in 90 Seconds

Symbol	Description
Oxygen Deficit	Gas exchange inefficiency (PAO ₂ -gPaO ₂), mmHg
gPaO ₂ TM	Calculated arterial partial pressure of oxygen, mmHg
PAO ₂	End-tidal oxygen partial pressure, mmHg
PETCO ₂	End-tidal carbon dioxide partial pressure, mmHg
gPaO ₂ / FiO ₂	Ratio of arterial partial pressure of oxygen to fraction of oxygen inspired
gPaO ₂ / PAO ₂	Arterial to alveolar partial pressure of oxygen exchange ratio
SpO ₂	Blood oxygen saturation, %
Respiratory Rate (RR)	The number of breaths per minute
Pulse Rate (PR)	The number of heart beats per minute
RQ	Respiratory quotient, ratio of carbon dioxide produced to oxygen used
PiO ₂	Partial pressure of inspired oxygen, mmHg
Pbar	Barometric pressure, mmHg

Oxygen Deficit

Oxygen Deficit is the difference between the partial pressures of oxygen in the alveoli (PAO_2) and artery ($gPaO_2$). It represents the degree of severity of gas exchange impairment and is a surrogate for the A-a gradient. As Dr. John B. West states, 'Oxygen Deficit is the most informative measure of gas exchange.'

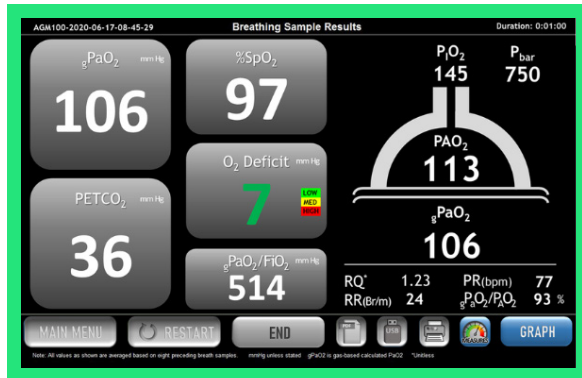


Fast, Non-invasive Assessment of a Patient's Cardiorespiratory Status

- Cardiorespiratory Assessment
- Improve Patient Care
- Improve Operational Efficiency
- Reduce Post-Operative Risk
- Improve Patient Safety
- Differential Diagnosis and Condition Severity

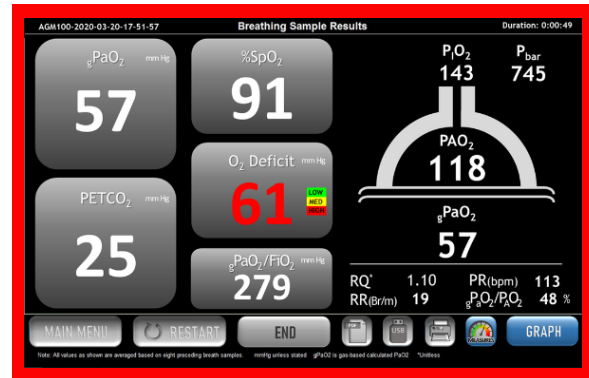
Example Test Results

Normal Gas Exchange



During steady-state breathing, a patient with no gas exchange impairment should exhibit a low Oxygen Deficit between 0-15 mmHg, which signifies little to no impairment between the alveolar oxygen level and the arterial blood oxygen level. In addition, normal CO₂ levels (PETCO₂) indicate adequate ventilation and high arterial blood oxygenation (gPaO₂) indicate adequate oxygenation.

Impaired Gas Exchange



Patients with moderate to severe respiratory impairment will display an elevated Oxygen Deficit (PAO₂ - gPaO₂), which indicates gas exchange impairment. Reduced CO₂ levels (PETCO₂) shows mild hypoventilation, with low arterial blood oxygenation (gPaO₂) indicate moderate hypoxemia. This patient is hypoxic, likely due to a problem with V/Q mismatch or diffusion limitation.

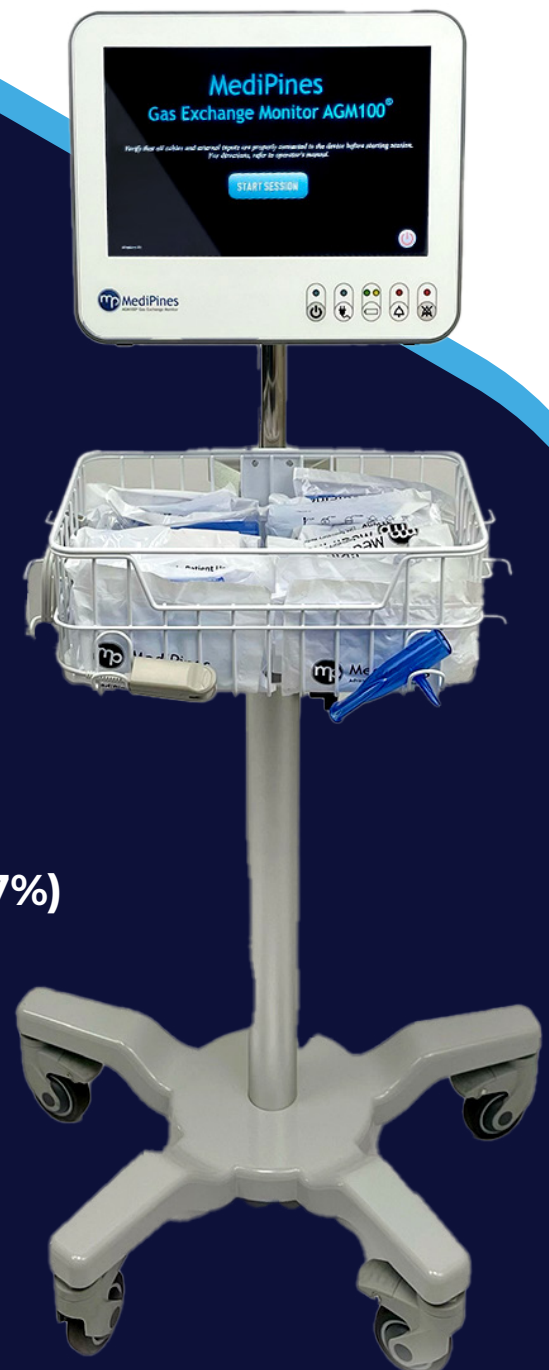
Ideal for Use In

- Emergency Room (ER): Rapid pulmonary assessment at triage to improve ER efficiency.
- Outpatient Departments (OPD): Early detection of respiratory decline during routine screening.
- Pre- & Post-Operative Care: Peri-operative monitoring of pulmonary gas exchange to detect early deterioration.
- Step-Down Units: Continuous assessment of recovering patients to support safe clinical decisions.

Actionable Clinical data

- Is Blood Oxygenation Sufficient?
- Is Ventilation Adequate?
- Is Oxygen Transport from Lung to Blood Efficient?

- Non Invasive
- Report within 90 seconds
- Portable (less than 1-kg wt.)
- Accurate - correlates highly with arterial blood gas R-square value: 97%)
- Auto-calibration without any reagent/technician
- AGM100 can be used in Emergency rooms, OPD and PFT rooms.



MediPines Publication Summary:

Ainslie AGM100 Validation Study



Title: Validation of a Non-invasive Assessment of Pulmonary Gas Exchange During Exercise in Hypoxia

Published: April 2020 Edition of CHEST

Authors: Connor A. Howe, David B. MacLeod, Liisa Wainman, Samuel J. Oliver, Philip N. Ainslie

Participating Universities: University of British Columbia (Canada), Duke University (United States), Bangor University (United Kingdom)

Background: Pulmonary gas exchange efficiency, determined by the alveolar-to-arterial PO₂ difference (A-aDO₂), progressively worsens during exercise at sea-level; this response is further elevated during exercise in hypoxia. Traditionally, pulmonary gas exchange efficiency is assessed through measurements of ventilation and end-tidal gases paired with direct arterial blood gas (ABG) sampling. Since these measures have a number of caveats, particularly invasive blood sampling, the development of new approaches for the non-invasive assessment of pulmonary gas exchange is needed.

Research Question: Is a non-invasive method of assessing pulmonary gas exchange (MediPines AGM100®) valid during rest and exercise in acute hypoxia?

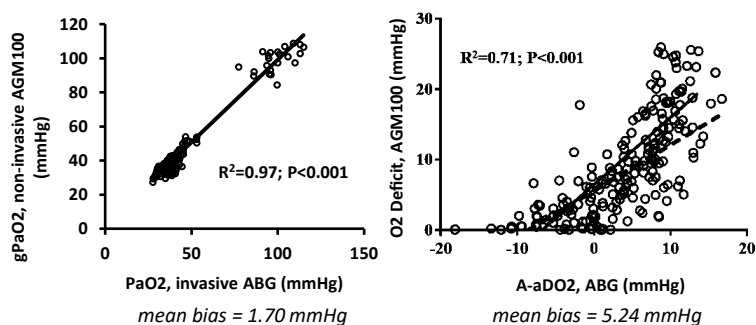
Study Design and Methods: 224 data points were obtained from twenty-five healthy participants who completed a staged maximal exercise test on a cycle ergometer in a hypoxic chamber (FIO₂=0.11). Simultaneous ABGs via a radial arterial catheter and non-invasive gas-exchange measurements (AGM100) were obtained in two-minute intervals. Non-invasive gas exchange, termed the O₂ deficit, was calculated from the difference between the end-tidal and the calculated PaO₂ (via pulse oximetry and corrected for the Bohr effect by using the end-tidal PCO₂). Non-invasive O₂ deficit was compared to the traditional alveolar to arterial oxygen difference (A-aDO₂) using the traditional Riley analysis.

Results: Under combined conditions of normoxic rest, hypoxic rest and hypoxic exercise, the results revealed strong correlations between the calculated gPaO₂ (MediPines AGM100) and directly measured PaO₂ (arterial blood gas).

$$R^2 = 0.97$$

(n = 224)

At hypoxic rest and exercise: strong relationships between MediPines AGM100 (gPaO₂) and ABG PaO₂ and O₂ deficit with A-aDO₂ remained.



Conclusion Summary: This study found that pulmonary gas exchange efficiency measured using a non-invasive gas exchange monitor provided a valid and reliable measure against directly measured arterial blood gasses at rest and during hypoxic exercise. Further, the non-invasive oxygen deficit was strongly correlated with A-aDO₂ values obtained from the classic invasive approach. These results provide promising evidence to support the use of non-invasive gas exchange assessments which may be applicable to both laboratory and clinical patient assessments.