

Clinical Study Summary: Predicting Respiratory Deterioration



Title: Predicting Deterioration in Gas Exchange Noninvasively Using the Alveolar Gas Meter

UC San Diego

Presented: April 2022 American Thoracic Society Annual Meeting



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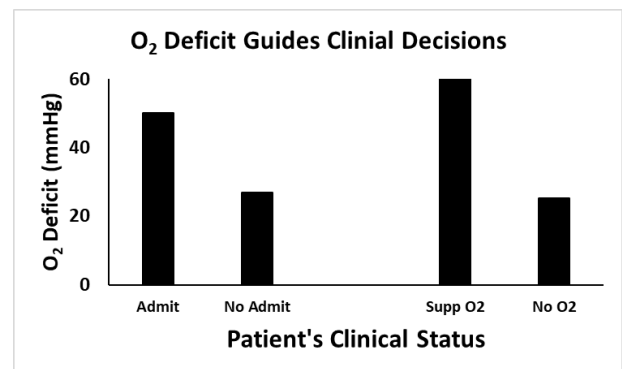
Background: The COVID-19 pandemic magnified the importance of gas exchange abnormalities in early respiratory failure. Pulse oximetry use became widespread during the pandemic with many patients self-monitoring. However, pulse oximetry has limitations based on skin pigmentation, presence of peripheral vascular disease, metabolic derangements, and inherent inaccuracies as compared to arterial blood gas (ABG) measurements. Thus, novel, noninvasive strategies to assess gas exchange would be desirable.

Research Question: Can the AGM100 be used to triage patients with COVID-19 based on risk of respiratory deterioration and identify patients who require immediate health care interventions.

Study Design and Methods: Patients presenting with dyspnea and high pre-test probability for COVID-19 were enrolled with informed consent and had OD measured using the AGM. The OD was then compared between admitted versus discharged patients and between patients who required supplemental oxygen and those who did not.

Study Results: AGM is a useful method to triage patients based on risk of respiratory decompensation.

Figure: Oxygen Deficit was significantly elevated in COVID patients who required hospital admission and supplemental oxygen compared to those who did not.



Author Conclusions: The oxygen deficit (a surrogate for the alveolar-to-arterial oxygen difference) as calculated by the alveolar gas meter provides a useful tool for clinical triage of COVID-19 positive patients. An oxygen deficit > 31 is modestly sensitive for needing hospital admission and an oxygen deficit > 37 is highly sensitive for needing supplemental oxygen administration during the hospitalization.