Pulse Oximeters More Likely to Be Inaccurate for Black Patients

For African Americans, inaccurate blood oxygen measurements according to pulse oximeters could significantly affect COVID-19 treatment.

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Pulse oximeters are used to measure the level of oxygen in the blood, which helps doctors make key treatment decisions. But new findings published in The New England Journal of Medicine reveal that these devices are more likely to provide inaccurate measurements for Black patients compared with white patients, which can have major implications for those with COVID-19, according to a news release from the University of Michigan.

For the study, researchers reviewed pulse oximeter and arterial blood gas measurements for patients with COVID-19 hospitalized at Michigan Medicine: University of Michigan. When clipped onto a finger or toe, pulse oximeters emit a beam of light that is absorbed differently by oxygen-rich and oxygen-poor blood. Arterial blood gas is a more sophisticated medical test that measures oxygen saturation in a blood sample.

Next, scientists compared this data with the same information for those hospitalized at multiple intensive care units across the United States who identified as Black or white. Investigators wanted to learn how often arterial blood gas tests showed an oxygen level reading of less than 88% when pulse oximeter measurements registered between 92% and 96%. An oxygen level reading below 88% is generally when most physicians make treatment adjustments.

The results showed that for Black patients, oxygen levels measured with pulse oximeters differed greatly from those assessed via arterial blood gas tests. Specifically, 12% of the time that Black patients exhibited a pulse oximeter reading in the safe range, their oxygen saturation level on an arterial blood gas was below 88%. In white patients, this discrepancy occurred only 4% of the time.

“I think we’re going to have to be more cautious about whether Black patients are truly getting that amount of oxygen they need,” said Michael Sjoding, MD, an assistant professor of internal medicine at Michigan Medicine. “We need to pay more attention to arterial blood gas results to confirm that the patient is getting enough oxygen.”

Sjoding suggested that device makers may need to implement changes to ensure that all patients

receive correct readings, as inaccurate blood oxygen measurements could also affect outpatient care, especially for patients who need supplemental oxygen at home.

For related coverage, read “Black Americans Report Worse Effects of Bias From COVID-19.”
