MEDIBEATS
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In Pulmonology

Pulse Oximetry Accuracy Varies Among Different Groups Francois Rollin, MD and Neil H. Winawer, MD, SFHM, reviewing Henry NR et al. Crit Care Med 2022 Feb Holder AL and Wong AI. Crit Care Med 2022 Feb Self-identified Black patients were more likely to have occult hypoxemia missed by pulse oximetry. Measuring arterial oxygen saturation with pulse oximetry might be less accurate in patients with darker skin pigmentation, and the effects of such a difference on patient outcomes is unclear (N Engl J Med 2020; 383:2477. opens in new tab). In a retrospective observational study, researchers paired >128,000 pulse oximetry–estimated oxygen saturation (SpO2) measurements with their associated arterial blood gas (ABG)–derived oxygen saturation (SaO2) readings in >26,000 adult intensive care unit (ICU) or surgical inpatients at 3 U.S. academic medical centers. After adjusting for potential confounders, self-identified Black patients were significantly more likely to have occult hypoxemia (defined as SaO2 <88% despite normal SpO2 [i.e.,≥92%]) during hospitalization than were white patients (6.2% vs. 3.6%). Self-identified Asian and American Indian patients also had greater risk for occult hypoxemia (6.6% each) than did white patients, but low numbers of minority patients led to differences that were not statistically significant.

Occult hypoxemia was associated with higher risk for mortality in surgical patients (odds ratio, 3.0) and ICU patients (OR, 1.4). COMMENT The authors recognize that race (a social construct) is not synonymous with skin pigmentation. That said, their study shows that skin pigmentation (which can affect light absorption) in self-identified Black patients influences the results of pulse oximetry in a way that can affect clinical outcomes adversely. As editorialists note, clinicians should have a low threshold for obtaining ABG-measured SaO2 in patients with darker skin pigmentation, especially when the index of suspicion for hypoxemia is high.

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