

Pulse oximetry monitoring overused in infants with bronchiolitis

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Monitoring blood oxygen levels with continuous pulse oximetry is being overused in infants with bronchiolitis who do not require supplemental oxygen, according to a study by researchers at Children's Hospital of

Philadelphia (CHOP). The researchers found the use of continuous pulse oximetry occurred frequently and varied widely among hospitals in their sample, despite national recommendations advising against the practice.

The findings were published today in *JAMA*.

"We all have a tendency to believe that continuous monitoring is something that is always going to provide benefit and safety, and unfortunately that isn't the case," said Christopher P. Bonafide, MD, MSCE, an attending physician at CHOP and first author of the study. "When you monitor patients unnecessarily, it creates risk not only for that patient, in terms of longer hospital stays and increased costs, but also for the entire unit due to the potential for alarm fatigue. Our prior work shows that when alarms go off for both patients who need immediate, life-saving care and those who do not, it diminishes trust in the accuracy of the alarms for signaling true emergencies."

Acute viral bronchiolitis is the leading cause of infant hospitalization and is usually treated with supportive care, including fluids, suctioning, and [supplemental oxygen](#) when necessary. The Society of Hospital Medicine Choosing Wisely initiative discourages physicians from using continuous pulse oximetry monitoring in infants with bronchiolitis unless they are on supplemental oxygen, and the American Academy of Pediatrics also recommends against the practice.

To examine the extent to which hospitals were using continuous pulse oximetry in infants with bronchiolitis, the research team conducted an observational study in 56 U.S. and Canadian hospitals in the Pediatric Research in Inpatient Settings Network (PRIS), an independent, [hospital](#)-based network. The hospitals in the study included freestanding children's hospitals, children's hospitals within hospitals, and community hospitals. Researchers gathered data throughout one bronchiolitis season, from December 1, 2018 until March 31, 2019 and included 3, 612

patients between the ages of 8 weeks and 23 months.

Of the patients in the study who did not receive any supplemental oxygen, 46% were monitored via continuous pulse oximetry. After standardizing the results to account for differences in variables across hospitals that could have influenced monitoring, researchers found the percentage of patients being unnecessarily monitored ranged from 6% to 82%.

"We were surprised by the huge amount of variation we saw across the hospitals in this study, which shows many institutions are using monitoring unnecessarily as a safety net," Bonafide said. "This study represents an essential first step in phasing out an overused, low-value care practice that does not improve outcomes, raises healthcare costs, and leads to [alarm fatigue](#) among healthcare workers."

The CHOP-led study was a collaborative, multi-institutional effort that included researchers from CHOP, University of Pennsylvania, Boston Children's Hospital, and Cincinnati Children's Hospital Medical Center. The research was supported by a cooperative agreement awarded by the National Institutes of Health/National Heart, Lung, and Blood Institute (award number U01HL143475).

More information: Bonafide et al. "Prevalence of Continuous Pulse Oximetry Monitoring in Hospitalized Children With Bronchiolitis Not Requiring Supplemental Oxygen," *JAMA*, April 21, 2020. [DOI: 10.1001/jama.2020.2998](https://doi.org/10.1001/jama.2020.2998)

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