

Study shows home oxygen monitoring safe for premature infants, can shorten treatment

July 15 2020, by Susan E. W. Spencer



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A new study led by UMass Medical School researchers has found that parents of premature infants on home oxygen therapy can safely and effectively report babies' oxygen levels in between clinic visits.

Reporting oxygen levels from home every few days was associated with shorter use of home oxygen therapy and fewer adverse outcomes, compared with premature infants on home oxygen being monitored primarily in the clinic, according to the study published in the journal *Pediatrics*.

The study was done by Lawrence M. Rhein, MD, MPH, the Stoddard Chair of Pediatrics, and chair and associate professor of pediatrics, and Ted M. Kremer, MD, associate professor of pediatrics, along with colleagues at nine clinical sites throughout the United States.

Researchers were able to determine, for the first time, the safety and typical length of home oxygen treatment among [premature infants](#) with lung disease; whether parents could effectively monitor and report infants' [oxygen levels](#) from home; impacts on health and safety such as infants' weight and adverse health events; and the impact of home oxygen therapy on families' quality of life.

Dr. Rhein said he hoped the study would give families more choices.

Nearly one-third of early preterm infants, born between 23- and 28-weeks' gestational age, who are diagnosed with bronchopulmonary dysplasia will require home oxygen. Standard guidelines for home oxygen care for these infants didn't exist, according to Rhein, because until recently few of these babies survived.

"We know that there are thousands of infants who go home with oxygen every year in the U.S.," he said, "and we think that with the publication of a protocol, there's the opportunity to help even more."

Among 196 premature infants who were discharged from the [neonatal intensive care unit](#) on home oxygen therapy, 97 were randomly assigned to have their home oxygen data recorded and transmitted to the medical

center every few days in between monthly clinic visits. Ninety-nine [infants](#) were in the standard care group, receiving monthly clinic visits and an overnight inpatient test to determine eligibility to wean off home oxygen.

Infants whose oxygen levels were reported from home up to twice a week discontinued home oxygen therapy 22 percent sooner, a median of 71 days for those with recorded home oximetry versus 90 days for standard home oxygen therapy.

Those with recorded home oximetry also experienced better growth and fewer adverse events such as viral respiratory infection and feeding intolerance requiring intervention or hospital admission.

There were no significant differences in reported quality-of-life measures between the standard care group and the recorded home oximetry group, although both groups said their quality of life improved after their baby was weaned from home oxygen.

Rhein said that home oximetry is easy to use and the readings can be transmitted electronically or by mail to the medical center. He said it could save families from having to bring a vulnerable baby, along with oxygen tanks, into the clinic as often for assessment and therapy adjustments, protecting them from potential exposure to coronavirus and other viruses.

"And because we were able to make those adjustments multiple times between clinic visits, our hypothesis was that we would be able to potentially decrease the time that they're on oxygen," said Rhein.

Rhein and his colleagues plan to follow up with a multicenter implementation trial, using enhanced technology that automatically transmits home oximetry measurements to the medical center.

But the home oximetry protocol is already in place at UMass Memorial Medical Center and Boston Children's Hospital.

"It really has continued to show the same results of shortening duration of [oxygen](#) safely, so we're thrilled with the idea that as technology improves, that should be even more accessible," Rhein said.

More information: Lawrence Rhein et al. Transmitted Home Oximetry and Duration of Home Oxygen in Premature Infants, *Pediatrics* (2020). [DOI: 10.1542/peds.2020-0079](https://doi.org/10.1542/peds.2020-0079)

Provided by University of Massachusetts Medical School

Citation: Study shows home oxygen monitoring safe for premature infants, can shorten treatment (2020, July 15) retrieved 24 April 2024 from <https://medicalxpress.com/news/2020-07-home-oxygen-safe-premature-infants.html>

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