Using big data to save babies

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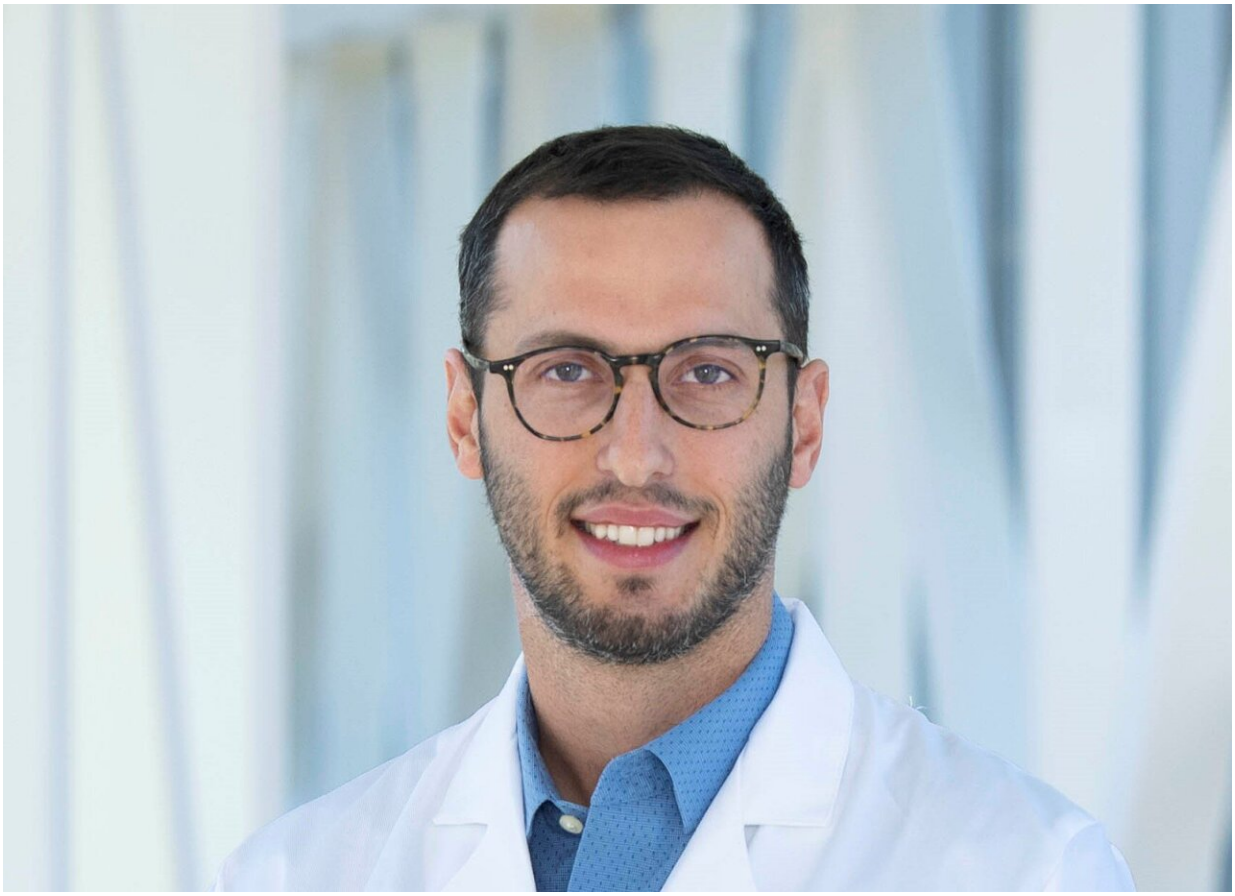

Gaston Ofman, MD, The University of Oklahoma Health Science Center. Credit: Gaston Ofman

Although bronchopulmonary dysplasia (BPD)—a chronic lung disease affecting newborns—is the most common complication of preterm birth, it remains difficult to diagnose and treat. Researchers from Fundación

INFANT in Buenos Aires, Argentina, and The University of Oklahoma Health Sciences Center, hope to address these difficulties using machine learning to inform the clinical care of preemies with BPD. The team will present their work virtually at the American Physiological Society's (APS) annual meeting at Experimental Biology 2021.

BPD affects between 20% and 40% of all infants with birthweight below 3 pounds, 4 ounces (1,500 grams). It usually subsides by age five but can extend into adulthood. Infants with BPD face prolonged hospitalization and are at risk of developmental delays and heart failure.

The research team presented an algorithm with a large data set of longitudinal clinical information for preterm infants, which the computer divided into three clusters. They then presented the trained algorithm with a second data set with comparable demographic characteristics. In this set, the computer was able to anticipate comorbidities and rehospitalizations better than the application of standard BPD diagnostic categories.

By more accurately aligning which biometrics correspond to different degrees of disease severity, these findings could enable better understanding of the underlying causes of BPD. They could also help clinicians diagnose BPD earlier and more precisely, allowing for personalized treatments.

Corresponding author Gaston Ofman, MD, says the next step is "to implement our analysis in real time and guide health care workers in their day-to-day care of preterm babies."

More information: Abstract title: "Machine learning discovery of lung disease trajectories in premature infants"

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