

Low blood oxygen strongly increases sick children's risk of death

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Low blood oxygen is more common in sick children than previously thought, and strongly increases children's risk of death, Australian-led research has found.

Murdoch Children's Research Institute pediatrician Dr. Hamish Graham led the international research project, published in *EClinicalMedicine*.

Dr. Graham said he hoped the findings would encourage [policy makers](#) and [health care workers](#) in other low and [middle income countries](#), especially in Africa, to increase the use of oxygen measuring tools and [oxygen therapy](#).

Dr. Graham worked with colleagues in Nigeria to record the blood oxygen levels of more than 23,000 children admitted to 12 medium-sized hospitals.

"Your [blood oxygen level](#) is the amount of oxygen carried by [red blood cells](#) from the lungs to rest of the body—low blood oxygen damages cells and can lead to death," Dr. Graham said.

"Our study found that one in four newborns and one in 10 children in hospital had low blood oxygen, and these children were eight times more likely to die than those with normal blood oxygen."

Dr. Graham's study is the largest report of low blood oxygen levels in children and shows that it is common not only in pneumonia, but also in many other conditions.

"Low blood oxygen is particularly common in newborn infants, especially those who are premature or have very difficult births," he said.

Dr. Graham said pulse oximeters, which accurately measure blood oxygen levels, are widely used in Australia. But hospitals in low- and [middle-income countries](#) are not often equipped with good quality devices, which cost about USD250.

"Our modelings suggest that better use of oxygen monitoring and therapy in the 12 highest mortality countries in the world could prevent up to 148,000 child pneumonia deaths annually," he said.

"Our study also suggests there are thousands more children and neonates with illnesses besides pneumonia that could also benefit."

University of Melbourne's Centre for International Child Health is leading the implementation of solar powered oxygen delivery systems in district hospitals in Papua New Guinea and Nigeria.

Dr. Graham said that training nurses to measure and supply oxygen were simple technologies that could save hundreds of thousands of children's lives.

"In sub-Saharan Nigeria, one in 10 children dies before their fifth birthday and the biggest killer of Nigerian children is pneumonia. Nigerian children make up one sixth of under-five pneumonia deaths globally. The first step to preventing these deaths is detecting low blood oxygen," Dr. Graham said.

More information: Hamish Graham et al. Hypoxaemia in hospitalised children and neonates: A prospective cohort study in Nigerian secondary-level hospitals, *EClinicalMedicine* (2019). [DOI: 10.1016/j.eclinm.2019.10.009](https://doi.org/10.1016/j.eclinm.2019.10.009)

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