

New mobile app provides faster, more accurate measurement of respiratory rate

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A new mobile app developed by researchers at the Child & Family Research Institute (CFRI) at BC Children's Hospital and the University of British Columbia can measure respiratory rate in children roughly six times faster than the standard manual method.

According to findings published this month in [PLOS One](#), RRate can reliably measure respiratory rate in an average of 9.9 seconds. Currently, [health care](#) workers typically measure respiratory rate by counting a patient's breaths for 60 seconds using a stop watch.

"Mobile phones are changing how we administer health care, especially in rural settings and developing countries where access to medical devices is limited," says Dr. Walter Karlen, who co-led the study with Dr. Heng Gan. "With this [app](#), we can give [health care workers](#) with few resources faster and more accurate measurements, help them make better decisions, and give them more time with their patients."

Dr. Karlen is a UBC Postdoctoral Fellow. At the time of this study, Dr. Gan was a Clinical Research Fellow. Both are working with Dr. Mark Ansermino and Dr. Guy Dumont at CFRI, UBC and BC Children's.

Researchers say this simple, but innovative piece of technology is a big step towards better diagnoses for children with pneumonia and other respiratory illnesses. Pneumonia is the leading cause of death of children worldwide according to the World Health Organization. With timely and accurate diagnosis, children with pneumonia can often be saved with

simple interventions such as antibiotics.

RRate allows workers to measure respiratory rate by tapping the touch screen every time the [child](#) inhales. In addition to calculating the rate of inhalations during a given time, the app also provides an animation of a breathing baby, allowing for a direct comparison with the breathing patient. A free, non-study version of the app is available online.

"We are leveraging the phone's capabilities of computing, touch screen, and vibrational feedback to measure respiratory rate faster and with more confidence," says Dr. Karlen.

Researchers collected data from 30 subjects who used the app while watching videos of children breathing at different rates. Using these findings, they developed an algorithm that enabled the app to produce accurate measurements in the least amount of time.

The next stage of this research is to further improve the diagnosis of pneumonia in low-resource settings by combining this app with the Phone Oximeter. Developed by CFRI and UBC [researchers](#), the Phone Oximeter provides non-invasive measurements of blood oxygen levels using a light sensor and a mobile phone.

Provided by Child & Family Research Institute

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