

Study Investigates Impact of Automating Respiration Rate Measurement Using Masimo Rad-G™ with RRp®



[Masimo](#) (NASDAQ: MASI) today announced the results of a prospective, observational study published in *Acta Paediatrica* in which researchers from the Hospital for Sick Children in Toronto evaluated the accuracy of plethysmographic respiration rate measurement (RRp®) using Masimo Rad-G™, a rugged, handheld device, on malnourished, hospitalized children in Nigeria.¹

This press release features multimedia. View the full release here: <https://www.businesswire.com/news/home/20210328005012/en/>

Noting that in resource-limited environments, respiration rate (RR) measurement is often used to directly inform medical decisions for children with respiratory problems, but that manual RR counting “remains a challenge,” Dr. Nancy Dale and colleagues investigated whether a technological solution might provide a useful alternative to manual counting. To make the evaluation, the researchers compared simultaneous device measurements and nurse-measured manual RR counts on malnourished children. The device chosen was the Masimo Rad-G, which uses a pulse oximetry sensor to measure both oxygen saturation and RRp, and which has been shown to provide good agreement between RRp and pediatrician-measured RR.² They enrolled 514 children, aged 6 to 59 months, who were hospitalized between July 2019 and May 2020, in Borno State, Nigeria. Study nurses were trained to operate Rad-G and also perform manual RR counts as part of twice-daily patient assessment. RR was manually counted for 60 seconds while Rad-G simultaneously measured RRp via a sensor attached to the patient’s toe, and both measurements were recorded.

Analyzing the 6,889 paired RR measurements, the researchers found that the mean Rad-G RRp reading was 1.3 bpm (95% confidence interval 1.2 – 1.4 bpm) higher than the mean manual RR value. The mean absolute difference between the two methods was 4.4 bpm (95% CI 4.3 – 4.5 bpm). When RR was classified as either “normal” or “fast” breathing (using WHO pneumonia thresholds), the two methods resulted in the same classification 84% of the time. When RR was classified according to BedsidePEWS RR sub-scoring (a 4-point scale), 80% of the scores were the same, and 99.3% were within 1 point.

The researchers concluded that their findings “highlight the potential clinical impact of changing practice from manual to automated RR count. Clinical implementation of the device should be carefully monitored to measure impact on patient outcomes.”

Study co-author Dr. Stanley Zlotkin commented, “Technical solutions to improve clinical care are laudable. We look forward to continuing this research.”

RRp is one of multiple RR monitoring modalities offered by Masimo, which also include acoustic respiration rate (RRa®) and NomoLine® capnography (RRc™), helping clinicians ensure they have the most suitable tool for each patient scenario.

First developed in partnership with The Bill & Melinda Gates Foundation, Rad-G is a rugged, handheld device that provides clinically proven Masimo SET® pulse oximetry, respiration rate (RRp), and other important parameters. With its long-lasting rechargeable battery, robust rubber casing, and light weight, Rad-G makes it easier for clinicians to quickly assess patients and make informed care decisions anywhere pulse oximetry or vital signs checking is needed in a compact, portable form factor. Coupled with the universal Mini-Clip™ pulse oximeter sensor to provide the ultimate in handheld versatility, Rad-G can be used in a variety of settings, including limited-resource environments, both indoors and in the field.

In the U.S., RRp is 510(k) cleared for patients greater than two years old.

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