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Camera-based monitoring technology measures absolute arterial blood oxygenation (SpO2) levels without contact

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Royal Philips today announced the results of the first published study to demonstrate that absolute oxygen saturation of arterial blood (SpO2), a vital sign that is commonly monitored in hospitalized and other patients, can be accurately measured across multiple patients using contactless technology. The study, published in the June issue of the journal *Anesthesia & Analgesia*, used Philips proprietary camera-based monitoring technology to measure the light reflected off the foreheads of 41 healthy adults to calculate SpO2. Through the results of this study, Philips, a global leader in patient care and monitoring solutions, is the first to demonstrate that contactless SpO2 can be calibrated across patients, just like conventional contact probes, allowing accurate measurements without individual adjustments.

In many care settings, monitoring heart rate, arterial blood oxygenation, respiration rate, and activity is a standard part of patient care to detect complications or deterioration. The current method for measuring these key vital signs requires the use of sensors on the skin or devices strapped to the body; however, these contact sensors may cause damage and distress in patients with fragile skin such as newborn babies.

"Vital signs monitoring is crucial across all types of care settings, but for patient populations with specific conditions, managing their care in a less intrusive way is critical in order to avoid unnecessary distress," said Carla Kriwet, CEO of Philips Patient Care & Monitoring Solutions.

"Contactless monitoring solutions will offer clinicians with a way to accurately measure vital signs for patients in a non-obtrusive way, and provide them with the data needed to know when to intervene."

A Contactless Alternative

For specific patient populations, including premature infants in the NICU, a contactless alternative would provide potential advantages such as avoiding skin damage in fragile patients and freedom to select a more physiologically central location with a possible faster response rate [1,2]. With every heartbeat, the cardiovascular pressure wave causes tiny 'micro-blushes' (small changes in skin color) in the face. While these changes are not visible to the human eye, Philips' contactless monitoring algorithms can calculate an accurate pulse rate by quantifying these changes.

Over the past 10 years, an increasing number of papers have published on the topic of contactless monitoring in the measurement of pulse or respiration rate; however, only a handful have explored SpO2 and this is the first study that has been able to convincingly demonstrate that calibrated contactless monitoring of absolute blood oxygen levels is possible. In this recent study, calibration of contactless, camera-based pulse oximetry was performed on a population of 41 healthy adults and the results are promising for the successful use of contactless monitoring for absolute blood oxygen levels in care settings without individual adjustments.

This study is the latest from Philips in its longstanding leadership in the area of contactless monitoring. In addition to the successful results of this study, Philips' contactless monitoring solutions show promise for accurately measuring key vital signs such as heart rate and respiration rate. Philips is well-positioned to leverage its expertise and leadership in patient monitoring to tailor contactless solutions for monitoring

applications across the care continuum.

More information: Wim Verkruysse et al. Calibration of Contactless Pulse Oximetry, *Anesthesia & Analgesia* (2016). DOI: 10.1213/ANE.0000000000001381

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Provided by Philips