

Noninvasive and Continuous Hemoglobin Measurement Device

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Technology description

Device Uses Ultrasound Technology to Provide Accurate, Cost-Effective, Real-Time Monitoring of Hemoglobin

This device enables the measurement and monitoring of a patient's hemoglobin concentration throughout their clinical treatment. Hemoglobin, found in all animal blood, is the molecule responsible for collecting oxygen in the lungs and carrying it to the tissues. Hemoglobin is among the most commonly measured parameters in clinical medicine. Accurate monitoring of hemoglobin concentration is crucial in order to prevent possible complications in critical care patients. The global market for hemoglobin monitoring devices is expected to be valued at \$2.2 billion by 2022. The traditional method of measuring hemoglobin concentration in the blood is invasive and requires frequently drawing blood from the patient and analyzing the samples. This process causes the patient discomfort and is costly, time-consuming and does not allow for real-time monitoring of hemoglobin concentrations. Unfortunately, commercially available non-invasive hemoglobin measurement devices have been unable to determine hemoglobin concentration levels accurately enough to be reliable in clinical settings. The accurate measurement of the change of volume of the hemoglobin mass has been a major problem that has prevented the development of an accurate noninvasive hemoglobin measurement device.

Researchers at the University of Florida have developed a non-invasive hemoglobin measurement device that uses ultrasound technology to accurately measure changes in volume providing accurate constant monitoring of hemoglobin levels.

Technology

This measurement device utilizes ultrasound and photometric technology to accurately measure the mass and volume of hemoglobin. The device utilizes a pulse oximeter probe and LEDs to transilluminate a patient's fingertip and measure how much light is absorbed by the radial artery located in the patient's finger. As a patient's heart beats, body tissues like their fingertips pulse. The device measures changes in the volume of the radial artery as the patient's fingertips pulse with

ultrasound technology and uses this data to determine the hemoglobin concentration present in the patient's blood.

Application area

Noninvasive and continuous hemoglobin measurement device for accurate real-time monitoring of hemoglobin concentrations

Advantages

Speeds up lengthy testing process, resulting in quicker patient care

Compact enough to be present in the operating room, allowing hemoglobin levels to be monitored throughout surgery, increasing patient safety

Inexpensive and precise, making hemoglobin monitoring both accessible and accurate

Institution

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