**PATIENT TIMELINE**

Dark Skin Tone Patient

- **0 hrs**: Develops Hypoxemia
- **4 hrs**: Overestimated Pulse Ox Reading
  - No clinical intervention provided
- **8 hrs**: Low Pulse Ox Reading
- **12 hrs**: Clinical Intervention

Delay in hypoxemia detection increases the risk of lung and heart related diseases

**CONTEXT**

Pulse oximeters measure blood oxygen saturation (SpO2) levels, providing critical information on a patient's respiratory health.

Annually in the United States, at least 240,000 patients suffer complications from their respiratory diseases due to incorrect pulse oximeter blood oxygen saturation (SpO2) readings.

**OPPORTUNITY & BENEFITS**

- **$3.6 million**
- **6.1%**
- **2.6 billion**

Potentially saved in US with solution to bias

Reduction in US hospital mortality

Dark skin toned people across the world can benefit

**OUR PRODUCT: EQUINOX**

- **LOW COST**
- **REUSABILITY & RELIABILITY**
- **QUICK PROCESSING**
- **PERSONALIZED CALIBRATION**

EquinOx can be easily sanitized, and can operate in a wide variety of temperatures and humidities.

EquinOx's sensor array accounts for differences in skin pigmentation.

EquinOx's ML Algorithm outputs measurement in less than 10 seconds.

**TESTING RESULTS**

The figure compares the average AC/DC ratio for a hospital-grade oximeter and EquinOx. It can be concluded that EquinOx can obtain accurate and precise PPG waveforms, as compared to a hospital-grade pulse oximeter.

**GREATER LIKELIHOOD OF A DARK SKIN TONED PATIENT DEVELOPING UNDETECTED HYPOXEMIA (LOW BLOOD OXYGEN)**

**17%**

DARK SKIN TONE PATIENTS WITH INACCURATE BLOOD OXYGEN SATURATION READINGS

This bias is hypothesized to originate in the higher concentration of melanin in pigmented skin, interfering with the light absorbance measurements used by pulse oximeters.

**REFERENCE**


**MEMBERS**

- Clinical Sponsors: Dr. Ashraf Fawzy and Dr. Jad Farha, Department of Medicine, Johns Hopkins School of Medicine
- Faculty Mentors: Dr. Elizabeth Logsdon and Dema Shumeyko

**REFERENCE**

Members: Jerry Zhang, Stanley Zhu, Janice Lin, Rahul Swaminathan, Yuqi Zhang, Clara Cho, Vivek Chari, Valerie Wong. Clinical Sponsors: Dr. Ashraf Fawzy and Dr. Jad Farha, Department of Medicine, Johns Hopkins School of Medicine. Faculty Mentors: Dr. Elizabeth Logsdon and Dema Shumeyko.

**REFER TO THE QR CODE TO SEE A VIDEO DEMO OF EQUINOX:**