



Society for
Technology in
Anesthesia

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Garrett W. Burnett, M.D.

Associate Professor

Department of Anesthesiology, Perioperative & Pain Medicine

Icahn School of Medicine at Mount Sinai

New York, NY



Conflicts of Interest

- I declare the following real or perceived conflicts of interest in the context of the subject of this presentation:
 - Research Grant: Anesthesia Patient Safety Foundation/Medtronic Research Award
 - “Pulse Oximetry Accuracy and Skin Pigmentation in Congenital Heart Disease: A Prospective Observational Study”
 - Total funding: \$149,999 (2024-2026)

Emerging Evidence



Critical Care and Resuscitation

ORIGINAL CLINICAL RESEARCH REPORT


Low Perfusion and Missed Diagnosis of Hypoxemia by Pulse Oximetry in Darkly Pigmented Skin: A Prospective Study

M. Koa Gudelunas, BS,* Michael Lipnick, MD,*†‡§ Carolyn Hendrickson, MD,*† Sky Vanderburg, MD, MPH,*† Bunmi Okunlola, MD,*†¶ Isabella Auchus, BA,*‡§ John R. Feiner, MD,* and Philip E. Bickler, MD, PhD*

medRxiv

THE PREPRINT SERVER FOR HEALTH SCIENCES

Skin Pigmentation and Pulse Oximeter Accuracy in the Intensive Care Unit: a Pilot Prospective Study

 Ashraf Fawzy, Harith Ali, Peter H. Dziedzic, Niteesh Potu, Eusebia Calvillo, Sherita H. Golden, Theodore J. Iwashyna, Jose I. Suarez, David N. Hager, Brian T. Garibaldi

doi: <https://doi.org/10.1101/2023.11.16.23298645>



Melanin and the Impact to Optical Signals Common in Pulse Oximetry
Presenting Author: Jake Dove, PhD, Medtronic, Boulder, Colorado, United States
Co-Authors: Scott McGonigle, MEng, Medtronic, Pedro Gomes, PhD, Medtronic



Recommendations

- Pulse oximeters are vital for the perioperative period
- Objective measures of skin pigmentation (Monk Skin Tone Scale, ITA)
- Changes to acceptable absolute differences
 - <1.5% for SaO₂ >85%
 - <3.5% for SaO₂ 70-85%



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References

- Gudelunas M *et al.* Low perfusion and missed diagnosis of hypoxemia by pulse oximetry in darkly pigmented skin: a prospective study. *Anesth Analg.* 2023. Online ahead of print. DOI: 10.1213/ANE.0000000000006755
- Fawzy A *et al.* Skin pigmentation and pulse oximeter accuracy in the intensive care unit: a pilot prospective study. *MedRxiv Pre-Print.* 2023. doi: <https://doi.org/10.1101/2023.11.16.23298645>
- Dove J, McGonigle S, Gomes P. Melanin and the impact to optical signals common in pulse oximetry. Poster presented at: the Society for Technology in Anesthesia Annual Meeting. January 12th 2024. Houston TX.