

COVID-19 and the pulse oximeter's beep

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I start to feel lightheaded, with joint aches, fever, sweats, chills, and a sore throat. Hybrid sensations that feel like something between tropical malaria and the winter flu. I begin to cough, sneeze, and splutter and decide to repeat the all-too-familiar COVID-19 rapid test. This time the result is boldly positive ... I finally have COVID-19 after three years of evading it. I go over the symptom checklist, my symptoms match, including the loss of smell — I can't even smell a chopped onion.

As the days go by, I feel progressively worse. I'm lethargic and encapsulated in the mental space of isolation and solitude. These don't feel like mild symptoms ... I am breathless, with palpitations, and I need monitoring at home before going to the hospital — temperature, pulse, respiration rate, oxygen saturation. Accompanying the soundtrack of coughs and sneezes is the intermittent beeping of the pulse oximeter on my index finger — a remarkable little device that has probably saved millions of lives by reading the level of that most precious gas of life — oxygen. However, rather than reassure me, the pulse oximeter taunts me. I recall that nearly three decades of research have demonstrated its lack of reliability in dark pigmented skin, like mine, and my oxygen sats are getting quite low.¹⁻⁵

The intersection of my medical, Black, and patient identities is being tested during my febrile ruminations as I stare intently at the beeping device with flashing numbers. Am I more ill than it appears?

Is the pulse oximeter my potential life saver or a plastic symbol of systemic racial bias in health technology design?

I reflect on Black people who have possibly lost their lives to the reassurance, "Your oxygen sats are ok." But what other device choices are there? How

come it has taken so long to innovate more accurate devices or raise awareness in health curricula and clinical practice?

Critical to our relationships with measuring devices such as the scale, thermometer, glucometer, and the oximeter, is our belief and blind trust that they are reliable. Conversely, unreliable devices can cause mistrust, nurture a sense of deception, threat, or suspiciousness, or leave us feeling frightened and unsafe. For me, the anxiety is both cognitively and emotionally uncomfortable, as well as unsettling. With COVID-19, this possibly increases my illness stress, cortisol, and adrenaline with each rapid heartbeat and laboured breath.

As I watch my oxygen saturation numbers drop, hypoxemic and breathless, I am left in no doubt that my knowledge, privilege and power as a physician have been blunted by the invisible but mighty virus wreaking havoc on my lungs and body. I'm grateful to be fully vaccinated and boosted. I have frequently stressed the importance of vaccination in Black spaces where vaccine uptake varies, fuelled by suspicion, misinformation and, in some cases, fear. So many Black lives have been lost through vaccine inequity and COVID-19 denial informed by systemic and interpersonal experiences of racism. The excess of Black deaths from COVID-19 — including health care professionals like myself — have been widely documented, and these cannot be explained by social determinants of health or overcrowding alone. My brain is cloudy as I ponder over the impacts of other factors in published literature, such as allostatic load — the cumulative effect of stressors on the body over time.

Through my haze, I face the agonizing realization that very few close trusted friends or experienced physician colleagues, regardless of skin colour, know the signs of hypoxia or hypoxemia in

Black skin ... gaping holes in my own safety net.

The World Health Organization, the US Food and Drug Administration, and many reputable public health authorities encourage us to look out for pale skin and bluish face, lips, or nails.⁶ But Black doesn't turn blue! So, what's the pathological colour spectrum of Black skin? If I were to say, "I can't breathe," who would believe I was genuinely in distress if I didn't turn blue? Black people like me turn ashen, grey or whitish (not bluish) around the skin, lips, tongue, and nails, and the conjunctivae may also appear grey.

As a Black physician-patient, I further appreciate how health care without trust can leave one in a very vulnerable position. Weakened by illness, helplessness and imbalances of power are magnified through an asymmetrical lens and I can imagine why some patients seek and trust alternative information online, or from friends, family, and faith groups. Authentic commitment to equity, diversity, inclusion, and accessibility and honouring Indigeneity requires innovation and development of tangible, sustainable, and safe health technologies that consistently deliver equity.⁷ Otherwise, we walk on the thin ice of performative platitudes, beeping away like my oximeter, by treating everyone the same. In my quest for lucidity, I ponder on how the premise of equality can lead to perpetuation of inequity — identical use of the oximeter across diverse skin tones is actually inequitable care.

My oximeter staggers, beeping an irregularity. My embodied decoding tells me something is not right. My ancestors were proud African drummers and the arrhythmias sound like a badly played drum. The pulse oximeter may not accurately measure my Black oxygen, yet it captures my aberrant Black pulse.

I appreciate why suspicion, mistrust and safety concerns underpin so many Black health care experiences. Isolated and sick, I miss the sinus rhythm of my daily routine and extra-systolic worklife.

I raise my finger and stare anxiously at the oximeter numbers. What do you really mean?

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