QUESTION:

‘How can medical education be improved for the benefit of the patient?’

TITLE:

Sea legs: navigating the undercurrent of the digital age

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Word count: 1,817

Sea legs: navigating the undercurrent of the digital age

One step forwards two steps back as I try to keep up with the African ladies grooving in perfect time to the afrobeats, blasting from a boombox. They're light on their feet, agile. The energy is electric. The orthopaedic kids, recovering from leg alignment surgery, and their families pour in from each adjoining ward into the main hospital corridor, compounding the lively atmosphere as they go. In Krio, to 'waka' is to walk, but I was quickly taught that to 'waka waka' is to dance! This part of the day was taken extremely seriously by all involved, patients and volunteers alike. No venous thromboembolism prophylaxis for these patients, just half an hour of 'waka waka' twice a day was enough to get the blood circulating. No one had a blood clot during my time there.

For three months, I had been living and working aboard a hospital ship off the coast of Sierra Leone, a country once torn apart by civil war (Asangna, 2017), later ravaged by Ebola, and more recently strained by the global effects of COVID-19 (Richards, 2020). It continues a long but gradual journey of recovery and renewal.

It was an eye-opening experience where I witnessed clinicians whose adaptability, clinical intuition, and capacity for human connection often surpassed what I was used to in more resourced settings. They showed me how to deliver excellent care with limited means, how to prioritise wisely and how to build trust in the absence of modern tools. I have since returned home with a profoundly reshaped perspective of the fears, values and stories of the patients I treat. Above all, they reminded me that the heart of medical education lies in the exchange of knowledge: teaching and being taught. This process should be reciprocal and form the foundation of both medical education and good medical practice.

Cultural competence and inclusivity

One way in which medical education can be improved is to ensure it reflects the diversity of the population it serves. The United Kingdom is home to a rich, multicultural society with over 10 million residents who were born outside of the UK, according to the latest census. (Office for National Statistics, 2022). Yet, much of our medical education remains centered on eurocentric, heteronormative, middle-class norms; particularly in reference images, case presentations, and diagnostic assumptions. For example, common dermatological conditions are still predominantly taught using images of white skin, leading to frequent misdiagnosis in patients with darker skin tones (Alvarado and Feng, 2021).

Similarly, I came to realise that standard ECG interpretations often fail to account for normal racial variations. Black patients often present with an increased QRS voltage that meets the criteria for left ventricular hypertrophy (LVH), potentially leading to over-investigation of cardiac pathology (Walsh et al, 2019) . We must acknowledge these discrepancies to address the inequalities that misrepresented racial data can impose on our patients. Medical students should be challenged to confront their own biases and critically examine the structural inequalities that influence health outcomes and fair access to care. A curriculum that truly reflects the diversity of the real world ensures that no patient feels unseen, mislabelled, or misunderstood.

Humanism in the age of machines

Artificial intelligence (AI) is rapidly transforming healthcare. Its benefits should be equally shared and could transform healthcare in Africa. We now live in a technological world that was unimaginable a generation ago with wearable diagnostics, telemedicine and advancements in robotic surgery. Medical education is central to this and must keep up.

Yet, technological literacy remains unintegrated in medical education and there is little formal education on how to navigate this new landscape (Wood et al., 2021). Teaching how to harness technology responsibly and ethically ensures patients benefit from innovation without losing their touch with human connection. Growing familiarity with AI can therefore improve diagnostic accuracy, streamline workflows, and highlight patterns that may otherwise be missed.

AI systems are built using patient data, but this is often without patient input. Just as we now involve patients in curriculum development and research design, we must teach future doctors to include patients in the AI conversation. How much automation is acceptable in their care? What trade offs are they willing to accept with accuracy and speed? (Zhang and Zhang, 2023) What concerns do they have about data privacy or algorithmic bias? Who is responsible if an algorithm misses a diagnosis (Tahri Squalli et al., 2023)? Students should be trained not just in what AI can do, but when it should be trusted and when it should be questioned. AI introduces new ethical challenges that most curricula are not yet prepared for.

A remarkable team of teenage girls from Nigeria has demonstrated the transformative potential of technology in advancing public health. They developed 'FD-Detector' (Patient Innovation, 2018), an innovative mobile application designed to identify counterfeit medications. A critical issue in the global pharmaceutical supply chain. According to the World Health Organisation, approximately 40% of counterfeit drugs worldwide are found in Africa, leading to thousands of preventable deaths each year (World Health Organisation, 2017). The motivation behind their project was deeply personal: one team member tragically lost her brother due to fake medication. This experience fueled their determination to find a solution. Despite having no prior exposure to computers or internet access, the team utilised open sourceware to conceptualise and build their application. 'FD-Detector' stands as a powerful example of how youth driven innovation, even in under-resourced environments, can address critical healthcare challenges and save lives.

By integrating AI into healthcare, we ensure that patients can benefit from both whilst preserving human connection in a virtual setting. It's not about replacing human judgment with algorithms, but about integrating the two to create safer, smarter care.

Learning on the job: building teaching into everyday practice

For teaching to truly benefit both healthcare professionals and patients, it must be made accessible and embedded into the usual rhythm of the working day. Too often, education is treated as an extra - optional, unpaid, or confined to evenings and weekends. This creates barriers for already overstretched staff. By integrating short, structured teaching sessions into protected time slots, learning becomes part of clinical life rather than a competing priority.

Further afield, Sierra Leone, one of the world's poorest nations (Banya, 2015), serves as a reflection of the need for every clinician to be a teacher. With only one medical school in the country, there is a chronic shortage of doctors. The World Health Organisation (WHO) estimates there to be 4 doctors per 100,000 people which falls significantly short of WHO's minimum recommendation of 55 doctors per 100,000 people (World Health Organisation, 2025). Limited infrastructure hones a "learning by doing" model. Though born out of necessity, this cultivates essential qualities for good patient safety which include a sharp sense of responsibility, resourcefulness and improved teamwork.

The most effective collaborations are those that work with, not takeover, local systems. Whilst there can be a role for western doctors to mentor local educators and help embed evidence-based practice, the key is to understand the context in which we integrate to empower the local workforce. It is crucial that we are always in partnership with local teams who understand cultural norms, language, and systemic constraints. When collaboration is done right, it becomes bidirectional and mutually beneficial to both parties involved.

This approach not only supports continuous professional development but also improves morale, fosters teamwork and directly enhances patient care. When teaching is valued and built into the day-to-day, it encourages shared responsibility for learning, upskilling, and delivering safer care. Such lessons are transferable and applicable to our own medical practice at home. Teaching peers and colleagues, especially in underperforming or overstretched teams, is not only a professional duty but a powerful way to uplift patient care.

Education beyond the profession: empowering patients

As doctors, we have a responsibility not only to pass on knowledge to our colleagues and the next generation of healthcare professionals but also to educate the people we serve.

A big part of the work we did in Sierra Leone involved delivering community focused education sessions aimed at demystifying common but often misunderstood medical conditions such as human immunodeficiency virus (HIV), malaria, and tuberculosis (TB) (World Health Organisation (Sierra Leone), 2025). As in many parts of the world, traditional beliefs such as witchcraft often shape how illness is understood. Mental illness or complications during childbirth are sometimes attributed to curses or supernatural forces (Yofer et al., 2021).

While these beliefs reflect deeply rooted cultural narratives, they can delay care seeking and foster stigma. Rather than dismissing such views outright, effective medical practice must engage with them respectfully. Our education sessions were designed not only to provide accurate medical information, but to break down fear, stigma, and misinformation that often surround these diseases. Local translators helped explain this with culturally relevant examples and visual aids. This helped patients understand how these illnesses are transmitted, how they can be prevented, and why early diagnosis and adherence to treatment are critical.

Importantly, we encouraged open dialogue, questions and discussion to build trust and empower individuals to take control of their health. In doing so, we aimed to shift healthcare

from something reactive and remote to something accessible, collaborative and rooted in the community.

In 2000, Sierra Leone recorded one of the highest maternal mortality rates in the world, with approximately 1,800 women dying for every 100,000 live births. Since then, the country has made remarkable progress. Maternal mortality has fallen by 74% over two decades, thanks to strategic efforts to expand healthcare infrastructure (World Health Organisation (Afro-Region, 2014) and easier access to essential medicines and emergency obstetric care. A key milestone came in 2010 with the introduction of free healthcare for pregnant women and children which was previously a major barrier to access.

It is clear that the most profound kinds of transformation come from within communities themselves. An informed patient is safer, more engaged, and more likely to experience better outcomes. Patient-centred education including local antenatal classes, outreach programs, and culturally sensitive health promotion has enabled women to recognise danger signs, make informed decisions, seek timely care, and become advocates for their own health.

Rediscovering the art of medicine

When discussions around global medical education arise, the gaze often shifts from high-income to low-income countries in search of support or aid. But in this unbalanced dynamic, we often miss the lessons which low-resource countries can teach us in the developed world.

The ‘waka waka’ embodies the Sierra Leoneon energy, humour, and humanity which challenged our assumptions about what healing looks like. It reminds us that recovery isn’t always quiet, sterile, or confined to the clinical setting. Sometimes, it’s loud, communal, and rooted in culture. By championing the lessons we learn whilst sharing our expertise, we intertwine what it means to epitomise change which shapes the definition of what it means to be a good doctor. Ultimately, medicine is not just about curing but about caring for the patient who remains at the heart of it all. The future of medicine lies not just in innovation, but in introspection. And perhaps, in learning to ‘waka waka’, we find our way back to the art of healing.

References:

Alvarado SM, Feng H. Representation of dark skin images of common dermatologic conditions in educational resources: a cross-sectional analysis. *J Am Acad Dermatol*. 2021;84(5):1427–31.Highlights the underrepresentation of dark-skinned imagery in dermatology education.

Asangna C. An examination of the Sierra Leone war. *Afr J Polit Sci Int Relat*. 2017;11(5):103–11. Provides a detailed historical overview of Sierra Leone's civil war.

Banya K. Sierra Leone: an overview. *Education in West Africa*. 2015 May 21;29:435. Contextualises Sierra Leone as one of the world's poorest nations.

Graybill LS. One Step Forward, Three Steps Back. War, Women and Post-Conflict Empowerment: Lessons from Sierra Leone. 2022 Jan 13:145. Explores post-war empowerment and challenges in Sierra Leone, reinforcing lived experience points.

Office for National Statistics. International migration, England and Wales: Census 2021. ONS; 2022 Nov 22. Supports the statistic of over 10 million UK residents born abroad. URL: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/bulletins/internationalmigrationenglandandwales/census2021

Patient Innovation. FD-Detector 2018 url: https://patient-innovation.com/post/2459

Richards P. Ebola and COVID-19 in Sierra Leone: comparative lessons of epidemics for society. *J Global History*. 2020 Nov;15(3):493–507. Analyses how epidemics have shaped Sierra Leone's health and social infrastructure.

Tahri Sqalli M, Aslonov B, Gafurov M, Nurmatov S. Humanizing AI in medical training: ethical framework for responsible design. *Front Artif Intell*. 2023 May 16;6:1189914. Proposes frameworks for integrating ethics into medical AI education.

Walsh B, Macfarlane PW, Prutkin JM, Smith SW. Distinctive ECG patterns in healthy Black adults. *J Electrocardiol*. 2019 Sep;56:15–23. Demonstrates racial variation in ECG readings, relevant to diagnostic discussions.

World Health Organisation. A study on the public health and socioeconomic impact of substandard and falsified medical products. 2017. Emphasises the global problem of counterfeit medications, particularly in Africa.

World Health Organization (Sierra Leone). 2025. Provides current data on Sierra Leone's health workforce and infrastructure. URL: https://www.who.int/countries/sle/

World Health Organization (Afro-Region). Improving quality of care to save lives: Sierra Leone; 2014. Documents Sierra Leone's efforts to reduce maternal mortality through quality care.

Wood EA, Ange BL, Miller DD. Are we ready to integrate artificial intelligence literacy into medical school curriculum: students and faculty survey. *J Med Educ Curric Dev.* 2021 Jun;8:23821205211024078. Surveys perceptions on AI education integration for future clinicians.

Yoder HN, de Jong JT, Tol WA, Duncan JA, Bayoh A, Reis R. Child witchcraft confessions as an idiom of distress in Sierra Leone; results of a rapid qualitative inquiry and recommendations for mental health interventions. *Child Adolesc Psychiatry Ment Health*. 2021 Dec;15:1–5. Explores cultural beliefs around illness, including witchcraft, relevant to community education.

Zhang J, Zhang ZM. Ethics and governance of trustworthy medical artificial intelligence. *BMC Med Inform Decis Mak*. 2023 Jan 13;23(1):7. Discusses ethical frameworks and accountability for AI in medicine, addressing responsibility issues.