


Digital health is a vital tool: How to make it more sustainable

August 19 2021, by Maddy Thompson



Data

- Implement data-driven and evidence-based protocols for clear and effective communication with common messaging to build citizens' trust (1)
- Work with global stakeholders to confront propagation of misinformation or disinformation through social media platforms and mass media (2)
- Implement a standard global minimum dataset for public health data reporting and a data governance structure tailored to communicable diseases (3)
- Enable health and care organisations by providing the necessary technology to collect high-quality data in a timely way and promote sharing to create health intelligence (5)

Healthcare resources and infrastructure

- Ensure countries prioritise digital health, particularly, improving digital health infrastructure and reaching digital maturity (4)
- Cultivate a health and care workforce with the knowledge, skills, and training in data and digital technologies required to address current and future public health challenges (6)
- Ensure surveillance systems combine an effective public health response with respect for ethical and privacy principles (7)
- Develop digital personal tools and services to support comprehensive health programmes (in disease prevention, testing, management, and vaccination) globally (8)
- Maintain, continue to fund, and innovate surveillance systems as a core component of the connected global health system for rapid preparedness and optimal global responses (9)

Nine recommendations from the Riyadh Declaration on Digital Health. Credit: [RGDHS 2020](#)

The pandemic has shown us the extraordinary potential of digital health to fight global health inequalities by providing expanded access to healthcare: as well as by better [informing our responses](#) to health crises.

Tools such as wearable monitoring devices, video consultations, and even [chat-bots driven by AI](#) can provide care from a distance and often cost less than a face-to-face meeting with a doctor or nurse. This, in turn,

can improve global access to high-quality treatment.

Throughout the pandemic, being able to collect [real-time data](#) from cases across the world has been vital to local and global responses to combat the virus and track its progress. [Machine learning](#) analysis of viral gene sequences, track-and-trace mobile apps and telehealth services have also played their part. But as this monumental shift towards [digital health](#) accelerates, the environmental issues it raises are often overlooked.

Climate change disproportionately affects [developing countries](#). Places that already face poor [health](#) outcomes are further subjected to the health effects of environmental change. Plus, considering that emissions from computing devices, data centers and communications networks already account for [up to 4%](#) of [global carbon emissions](#), leaving environmental factors out of digital health debates is a significant omission.

As we continue to roll out this indispensable infrastructure, we also need to assess how we can minimize its environmental impact. [My research](#) shows three main ways that digital health technologies can contribute to environmental change and what can be done.

Green mining

First, raw materials needed to produce digital health technologies including robotic tools, smartphones and cameras are taken from mines, which are mostly located in developing countries.

The toxic waste spillages that can occur when mining these materials create serious [environmental degradation](#), potentially exposing workers to dangerous toxins. Meanwhile, at the other end of the process, the mishandling of discarded electrical devices can also release [toxic chemicals](#) into the environment, creating severe health risks for [local](#)

[populations](#)—including [organ damage](#).

On top of this, the carbon required to produce electronic devices makes up around [8%](#) of all carbon produced globally. [Increased demand](#) for devices driven by digital health's expansion will only push emissions higher.

Steps including developing "[green mining](#)"—mining practices that minimize environmental damage and emissions while maximizing recycling and supply-chain efficiency—are vital to protect our planet alongside our health.

Green cloud computing

Second, from electronic health records to biometric data collected by wearable technologies, the digital health industry produces vast amounts of information. Health data accounts for around [30%](#) of the world's data.

This data and the insights it provides on population health are key to improving people's health. But due to the electricity needed to run the huge servers that host cloud services, safely storing data in the cloud can take up to [one million times](#) more energy than saving data directly to devices.

To reduce the environmental impacts of data centers, initiatives like [green cloud computing](#) (which aims for carbon-neutral data processing, for example, by investing in carbon offsets) and [virtualisation](#) (which reduces the physical numbers of servers needed to store data by shifting that data to virtual servers) should become key priorities.

The carbon costs of running artificial intelligence and [blockchain health technologies](#) to better support patients are also significant. As such, the use of environmentally conscious technologies such as [tiny machine](#)

[learning](#) and [compact AI](#), that reduce software size and power, need to be implemented.

Green IT

Third, we need to consider whether the [promise](#) that digital health will lower carbon emissions due to reducing travel to physical health centers is likely to materialize.

Although the increase in telehealth tech means that more patients are accessing healthcare from their homes or workplaces, these reductions in local travel are shown to have minimal effects on emissions and only become cost-effective when telehealth replaces local trips of at least [7.2km](#) (or just over four miles).

A more pressing—and overlooked—concern, however, is the cost associated with housing large telehealth operations in call centers. As with cloud servers, telecommunications centers need vast amounts of energy to [power and cool](#) equipment.

The NHS has recently pledged to achieve a [net zero](#) carbon footprint by 2040. However, as the recent [IPCC report](#) assessing the state of the world's climate indicates, change must be more rapid.

In the Philippines—home to a large hub of international telehealth operators—[green information technologies](#) such as recyclable office equipment and remote working are used to reduce the environmental costs associated with communication. Such practices must become commonplace.

Green initiatives should be adopted across the healthcare sector as far as possible. The problem is that many [digital health technologies](#) result from design decisions beyond the field of healthcare: so [big tech](#) must

also do its part in creating more sustainable systems.

Without taking such steps, we run the risk that digital health will only lead to additional global health burdens, particularly among the world's most vulnerable populations.

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