

Going green in cardiology

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Introduction

As the global population expands and the effects of climate change on health and disease become more pronounced, there is an urgent need to rethink our connection to the environment. Observations of unprecedented weather patterns and extensive climate research underscore this urgency. Consequently, every sector of society, including healthcare, must reassess and recalibrate its environmental footprint.

Globally, healthcare contributes substantially to emissions and environmental pollution in almost every aspect of its functioning, including disposable one-time use equipment, generation and processing of clinical waste, regular travel for patients and staff, and intensive energy consumption.¹ The challenge now is to critically assess the adverse environmental effects related to energy consumption, greenhouse gas emissions, and waste generation, along with the examination of the relationship between clinical utility, cost-effectiveness, and environmental sustainability of healthcare.²

The role of cardiology

Cardiologists and allied professionals involved in cardiovascular care can play an important role and help champion this cause, especially given the interplay of cardiovascular health and the environment. Cardiology has been at the forefront of many breakthroughs in medicines, technologies and practices, and could help lead the way for a green healthcare transformation. After all, promoting a sustainable way of living is almost the same playbook as that for better cardiovascular health.

However, it would be naïve to assume that we can do everything, and many factors are much more complex and require culture change. For instance, curbing medical tests will be feasible only when the concerns about potential fear of litigation are tackled. Other system-based elements also need to be in place, and the community at large needs to be on board with us and adopt a refreshed perspective on health and well-being while reconsidering often unrealistic expectations from healthcare.

So, what steps can we, as a global cardiology community, take starting today to reduce our collective carbon footprint? Here, we propose a simple call to greater mindfulness of our specific activities and examples of where we could start to make a positive impact incrementally.

(1) A greater focus on sustainable practice

- **Product life cycles:** As a general rule, for every medication and item of equipment we use, whether a statin or even a simple ECG, we should be mindful of the upstream environmental impact of the manufacturing process and the life cycle of such products, including acquisition of raw material, manufacturing, packaging, distribution, clinical use, and appropriate disposal.³
- **Medications:** Given the mutual environmental and personal benefits from lifestyle and diet changes for cardiovascular health, these should be intensively re-prioritized for primary prevention ahead of drug therapy.⁴ Equally, cardiac medications should be more

actively stopped where the benefit is limited, for example, anti-ischaemic treatments in the absence of angina, particularly after effective revascularisation.

- **Single-use equipment:** While prioritising safe and clinically sound care, it is advisable to limit the use of complex single-use healthcare tools when feasible. Instead, we should opt for equipment that can be reused, sterilised, or repaired, especially in cardiovascular surgery or interventional procedures.⁵ Additionally, when procuring such equipment, preference could be given to companies that reduce single-use plastic usage or adhere to eco-friendly manufacturing processes.
- **Test ordering:** In a specialty heavily reliant on diagnostics, while considering the appropriateness of each test, it is imperative to factor in the environmental implications of any “routine” or screening exams, including echocardiography, cardiovascular magnetic resonance, computed tomography and nuclear imaging, and when feasible, consider lengthening scan intervals. Beyond the immediate carbon footprint of the scan, we should not overlook the substantial and growing environmental cost tied to image data storage on cloud-based servers.⁶

(2) Sustainable travel and telemedicine

- **Promoting heart & eco-friendly travel:** Cardiologists have a natural mandate to champion healthier modes of transport, such as walking and cycling, for patients and staff in their institutions. The added green value of doing this can be easily further emphasised and promoted.
- **Conferences:** Few specialties have mega conferences like we do, with the European Society of Cardiology congress this year attracting more than 35 thousand visitors from across the globe. The carbon footprint of such events is hugely significant. Covid-19 demonstrated that virtual conferences can reduce carbon emission with an estimated 98% reduction in climate impact.⁷ However, this may come at the cost of reduced learning impact, networking, and innovation.⁸ Having and also enthusiastically adopting variations and hybrid model options for such conferences will help organisers reach a balance.
- **Remote monitoring:** Cardiology has been leading the way on remote monitoring, especially for pacemakers and implantable cardiovascular defibrillators (ICDs), with substantial environmental benefits, through reduced travel and associated environmental impact of a hospital visit. Similarly post Covid-19 virtual consultations have also increased. For some cardiac patients, in-person clinic reviews are important (e.g. heart failure assessment), but many others can safely be managed virtually.⁹

(3) Education, research, and advocacy

- **Education:** Cardiologists can promote the mutually inclusive actions that lead to good heart health and environmental benefits. Introducing elements of climate conscious decision making into the training of future doctors may also be a practical way to reduce the carbon footprint of our specialty.¹⁰
- **Research and innovation:** Cardiology has a rich history of innovation and is one area where we will no doubt lead efforts for more efficient healthcare in a sustainable way. Greater research is still needed to fully understand the environmental impact of what we do and to evaluate a new model of “financial *and* climate cost-effectiveness” of interventions that drive cardiology practice.

- **Advocacy:** As healthcare professionals who promote healthy lifestyles and see the health consequences of climate change, we are in a very powerful position to advocate for policies that prioritise environmental protection. Individual, national, and international societies should leverage this position to influence policymakers for regulations that encourage sustainable healthcare practices and reduce carbon emissions.

Conclusions

Acknowledging our environmental impact and adjusting our lifestyle and work habits to better suit planetary needs is everyone's duty. Here, we have highlighted a few areas where cardiologists and those providing cardiovascular care could be positive change-makers. Our institutions need to drive a culture of waste reduction, with circular economies and climate awareness. Ultimately, the real power to change our planetary trajectory lies with those who make political decisions. However, given that cardiovascular and planetary health are inexorably linked, as members of the cardiology community, we have the opportunity, through our actions and advocacy, to spark a meaningful wave of change.

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Figure Legends

Figure 1. Key areas for consideration in establishing a system for environmentally friendly cardiovascular promotion and practice.