

A Practical Guide for Physicians and Health Care Workers to Reduce Their Carbon Footprint in Daily Clinical Work

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ABSTRACT

With Earth Overshoot Day having recently passed, there is no space for complacency regarding taking care of our planet. On August 2, 2017, humanity used nature's resource budget for the entire year. For decades, we have lived far beyond our means by overexploiting natural resources and spewing pollution, such as microplastics and industrial chemicals, into our environment. On the other hand, public awareness of human-induced climate change has also increased since the 1980s. The frequent media coverage about extreme weather conditions and natural disasters, such as Hurricane Irma in 2017, serves as an important reminder that anthropogenic climate change is happening now.

Adverse health conditions associated with climate change include an increased prevalence of diseases and disorders. Although we all contribute to this development, as physicians we also have the privileged duty to protect global human health. Therefore, we should make every effort to cut down our own carbon footprint and adapt a more sustainable lifestyle.

The aim of this commentary is to provide feasible tips and strategies to effectively reduce one's individual carbon footprint, with a special focus on daily clinical and hospital work. Not only are these strategies easy to implement in daily clinical routine, but most of them are associated with important health benefits.

INTRODUCTION

The repercussions of human-induced climate change are unevenly distributed around the globe and continue to increase. Adverse health conditions associated with climate change include an increased prevalence of infectious diseases, heat-related disorders, mental health disorders, air pollution, and respiratory diseases.^{1,2} Although we all contribute to this development, as physicians we also have the privileged duty to protect global human health. Therefore, we should make every effort to cut down our own carbon footprint and adopt a more sustainable lifestyle.

Hospital-based health care significantly contributes to the depletion of natural resources and environmental change.³ Chung and Meltzer⁴ estimated that the health care sector is responsible for approximately 8% of total US greenhouse gas emissions. Although the environmental impact of health care has been quantified in many studies, health care providers and planners have been slow to recognize

their responsibility for taking action to mitigate climate change.⁵ Hospitals now gradually tackle this problem by attempting to comply with the 7 elements of a climate-friendly hospital, as identified by the World Health Organization.⁶ These efforts imply an increase in energy efficiency, optimized supply chains, improved waste management, and sustainably constructed buildings.

To implement more sustainable hospital-based health care, many institutions and societies have developed strategies and recommendations. For instance, the UK's National Health Service Sustainable Development Unit published a comprehensive carbon reduction strategy that assesses key areas where action must take place.⁷ Precise methods in various areas such as "procurement and food" and "low carbon travel, transport, and access" are outlined in an effort to curb the carbon footprint of the National Health Service in the UK. Sadler and Guenther⁸ emphasized the important role of modern hospital architectural design and its implications

for energy savings. Furthermore, Holmner et al⁹ outlined the role of health information technology, such as electronic health, or "eHealth," as an adaptation strategy to reduce societal vulnerability to climate change.

Increasingly, more scientists are coming up with promising ideas to curb the carbon footprint of hospital-based care. Although it seems that a tipping point has been reached, it will require time, perseverance, and investments to implement these strategies. In the meantime, we as physicians and health care workers cannot remain passive or take a defensive position. It is our moral duty to adopt more sustainable strategies and to contribute to greener hospitals. The aim of this commentary is to provide feasible strategies to effectively reduce one's individual carbon footprint, with a special focus on daily hospital work.

STRATEGIES TO REDUCE YOUR CARBON FOOTPRINT

On the Way to Your Workplace

There are some great opportunities to curb one's carbon footprint even before arriving at the hospital or clinic. Whenever possible, walk or ride your bike instead of using your car. Not only is this a great opportunity to stay physically active, it will also dramatically reduce your environmental footprint. If the distance to your clinic is too far, consider carpooling or public transport. If driving by car is indispensable, plan your route to avoid heavy-traffic areas, and the resulting additional pollution from idling vehicles, by leaving home before or after rush hour or by using alternate routes.

The Throwaway Culture

If you frequently eat fast food, such as prepackaged sandwiches, you will automatically generate a lot of unnecessary waste. Just imagine a usual workday during

which you buy at least one cup of coffee in the morning, a sandwich for lunch, and some snacks at the hospital cafeteria in the afternoon. We too often crave quick energy in the form of sugar and fat while completely neglecting the fact that this behavior is not only detrimental for our own health but also for our environment. Tremendous amounts of plastic waste are generated daily because of the popularity of plastic cups and cutlery. Although these single-use items are convenient, they constitute an immense burden for our planet. Try resisting the force of habit by using a stainless steel mug and by bringing your own reusable utensils. Avoid unnecessary items such as plastic straws, and organize a place in your office to store your utensils. This simple yet effective strategy is one of the most powerful ways to curb one's carbon footprint in daily clinical routine. Furthermore, always prefer recyclable paper over plastic packages. Try to gradually eliminate single-use products from your repertoire.

Meals and Snacks

Constitution of an environmentally friendly lifestyle is obviously not only about how your food is packaged but also about what you eat. Try to cut down your amount of highly processed meals while increasing the amount of locally produced fresh foods. Gradually add more seasonal fruits and vegetables to your menu and constantly remind yourself to replace packaging-intensive fast food with healthier options such as bananas and apples. Not only do fruits and vegetables provide you with vitamins and antioxidants, but they already come in their own natural wrapping, compared with plastic-smothered processed alternatives.

Avoid hypoglycemia because it promotes binge eating to quickly supply the body with sugar. In such situations, we too often resort to candy and sweets and hence fail to cut down the amount of highly processed foods we consume. Furthermore, some studies suggest that organic foods are significantly lower in pesticide residues and nitrates while providing significantly greater levels of certain nutrients.¹⁰ Insecticide residues on foods are known to have a potential negative impact on our health, and above all, they are detrimental to our

environment.^{11,12} Regarding this point, it seems advisable to primarily buy organic foods; nevertheless it is crucial to always look at the label of origin to avoid foods obtained through unnecessarily long transport routes.

Reducing consumption of meat and dairy products is another formidable way to promote both environmental protection, via reduced production, and one's personal health.¹³ For many people this may sound like a huge challenge, and it may be helpful to collectively introduce a meat-free or dairy-free day at your hospital. The plant kingdom offers a variety of foods that are particularly rich in protein, including intact whole grains, beans, legumes, nuts, and seeds.¹⁴ According to Tusso et al,¹⁵ individuals who eat a well-balanced plant-based diet are not at risk of protein deficiency, and we must understand that meat is not the only option to ensure adequate protein intake.

Ask the head chef at your hospital cafeteria to offer a wider array of vegetarian or vegan options and to proactively support the American Medical Association's call for hospitals to reduce processed meats and sugary beverages.¹⁶ Unite with your colleagues and exchange ideas on how to convince your local policy makers and decision makers to provide healthier food at your clinic. A single person's remark is often ignored, but the voice of a united stance is loud enough to initiate changes. Gather ideas and support each other to reduce highly processed and extensively packaged foods that require large amounts of petroleum-based fuels in their production process.

Office Work and Administrative Tasks

With an ever-increasing number of administrative tasks and paperwork, we spend less and less time at the patient's bedside. Writing notes, medical reports, and discharge letters creates mountains of paper. Although it is more environmentally friendly to use recycled paper over virgin paper, most hospitals have strict instructions and regulations on how an official document must look. Nevertheless, use recycled paper whenever possible and always consider the environment before printing. Although it is convenient to print the whole file of a patient,

think twice about what information you really need to answer specific questions. Many files contain figures of radiologic or pathologic examinations, which often lack contrast and quality once they are printed on paper. Furthermore, prefer black-and-white printing over full color and make frequent use of the two-sided print function. Two-sided documents are an excellent way to greatly reduce the amount of required paper.

Before starting ward rounds, turn off lights in your office and turn off devices you won't need again. Be aware that electronic devices left on standby mode can use up to 90% of the energy they would use if fully switched on.¹⁷ Make sure you close your office windows while running the air conditioning in summer. Pay attention to these small but important things because they all contribute to an increased carbon footprint. Most of us try to save energy at home to save costs; why not do so at the hospital as well?

Other Strategies

There are many more ways and opportunities to curb your carbon footprint as a physician. Roberts and Godlee¹⁸ presented strategies to reduce the carbon footprint of medical conferences, such as through videoconferencing, and emphasized the massive amount of carbon dioxide generated from air travel. Nathans and Sterling^{19,20} calculated the carbon footprint of the annual meeting of the Society for Neuroscience in Washington, DC, in 2014. They estimated a total of 22,000 metric tons for the whole event, roughly equivalent to the annual carbon footprint of 1023 Americans in 2014.^{19,20} Considering these huge amounts of greenhouse gas emissions, we should think twice before attending a 1-day conference at the other end of the world and instead increase our use of videoconferencing tools. Although such events and travels have their charm, there may be many benefits in setting a more local focus.

The same applies for vacation and recovery from the often-stressful everyday life in the hospital. By spending your vacation and holidays close to home and by cutting down on long-distance air and car travel, you can further decrease your carbon footprint.

When teaching students or preparing in-house training, avoid printing extensive guidelines that are easily accessible online. Upload your lecture slides to your hospital server instead and offer single-page handouts containing the most important points and literature recommendations. Make use of your university library or the local public library and rent books and teaching resources instead of buying new ones on a regular basis.

CONCLUSION

Although most strategies and recommendations provided in this guide are simple and feasible, we often encounter problems when trying to put them into practice. We all know how busy daily life can be, and sometimes it just seems impossible to find time to pay attention to things that may interrupt one's workflow. Even though we know that some of our habits are environmentally unfriendly, we do not change them because of their convenience. Implementing changes may be a challenge at first, but in the long run our planet, and everything that lives on it, will benefit from it. More than ever before, we must continually remind ourselves that climate change is a threat to global public health and that a few simple steps can greatly reduce our daily carbon footprint. By creating awareness and by leading by example, we have the power to contribute to change. Physicians are regarded as trusted communicators, and we should start to take an active role in environmental conversations by presenting more evidence of the threat to human health from human-made climate change.

Communicate with your colleagues and your unit to work together toward a rewarding objective: Preserving our

beautiful planet for future generations while improving global public health and your personal health at the same time. ❖

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